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WHEAT.



When we take into consideration the present extraordinary high price of nearly all the materials of human food—especially of bread, the staff of life, we come to the conclusion that probably no subject could be treated upon, which would profit-

ably interest a greater portion of our readers, than an article on this all-important agricultural product—together with brief histories of the character, transformations and habits of the various destroyers, and diseases, to which it is subject.

We doubt much whether the culture of this cereal is fully appreciated by the community at large; believing as we do that it has no inconsiderable share of influence on the growth of civilization; for it has undoubtedly followed the progress of man's improvement, in all countries, probably from the foundation of the world. It is emphatically the food of civilized man—the bread of refinement and taste. The loaf of Genesee flour is the substantial luxury of polished life, while the cake of Indian corn, baked in the ashes, is the symbol of savage fare. The former has become the standard food of the wealthy, while the latter is placed on his table as a variety, more than one of common resort. The growing of wheat, too, is a civilized act; it is scarcely compatible with savage life. Its judicious culture requires the highest skill of the husbandman's art, for the plant is a profitless product, without the knowledge and experience of an educated intelligence. It contains the greatest quantity of starch, and likewise by far the most gluten (equal to *one-fifth* of the whole)—a principle from which it derives its essential quality, which, above all others, peculiarly adapts it for bread. Though the expense of its culture may be somewhat greater, yet it is always chosen when the climate permits, or the poverty of the district does not constrain the inhabitants to be content with a cheaper food.

Wheat has undoubtedly been cultivated in Egypt from the remotest periods, and the details of plowing, sowing, harvesting and garnering this grain, depicted upon the ancient tombs at Thebes, are among the most striking and remarkable of the remains of Egyptian art. No one can contemplate these pictorial representations without being impressed with the advanced state of civilization, so early reached by this people. It would appear that many kinds of grain were produced by them; and among the varieties of wheat, the "seven-rowed" is mentioned in Pharaoh's dream. This has lately been grown in England, *said* to be from grains found in mummy-cases brought from Thebes. It was also one of the principal staples of food of the Israelites, as is abundantly proved by the Old Testament.

The cerealia are all remarkable for their wonderful power of multiplication—each grain or seed throwing out several stalks, all of which produce ears; and the number of these are not limited, but depend, more or less, on favoring circumstances. This increase in the stalks is performed by a second set of roots, shooting out at the surface of the ground, subsequently to the first or primary roots. An experiment in England has demonstrated that a single grain of wheat, sown on the second of June, produced eighteen stalks: on the eighth of August the plant was taken up, the stalks divided from each other and replanted, and every separate plant threw out fresh roots and stalks. This process was repeated a number of times, until, by the following April, they had multiplied to 500 plants, all extremely vigorous; the number of ears from these amounted to 21,109, and the number of grains to 576,840.

The cultivation of wheat prevails everywhere in temperate climates; its climatic range is greater

than that of any other grain; it differs in its requirements so essentially from most of the other cereals, that the mean temperature of the year is a less decisive test of its successful production than might otherwise be supposed. Its peculiar flexibility of character is dependent rather on hygro-metric effects, than mere alternations of heat and cold; and its sensitiveness to extremes of dryness and humidity, restricts or extends its culture, rather than isothermal lines; but temperature becomes the important element during those months when it ripens—13° being assigned as the maximum of range under which this result is accomplished in similar climates; accordingly, we find that the time of harvest in particular localities bears a more decisive relation to thermometric, rather than any other cause. In the extreme southern states of the Union the harvest time is reached in May, when the mean temperature is 67° or 70°. In Virginia this mean is not arrived at until June, and, in New York, in its best wheat districts, the grain is not ripe until July, when the mean is about 69°; thus it will be perceived that a temperature for the last month of the growth of wheat, does not exceed 70°, but falls below this limit. The latest generalizations would seem to prove that the sensitiveness of this grain to the modifying effects of temperature and humidity is greater in the United States than in Europe. Aside from mere soil characteristics, the most fertile wheat districts of our country hold a peculiar relation to our great chain of inland seas, and go far to demonstrate the effects of the near proximity of large bodies of water to wheat-growing regions; but this has not been studied with that care that can lead to any but conjectural results, and we trust that we shall be enabled to return to this subject, in a future article, with some degree of certainty and profit.

England, the northern plain of Germany, and the central areas of Russia—the last stretching eastward from Moscow to the Volca, at the boundary of European Russia, and southward from Moscow to the Black Sea, with Wallachia and Lower Hungary west of the sea—may be designated as the chief wheat climate of Europe.

Wheat is grown on nearly every description of land; but the soils most preferred for its culture are more or less clayey. Indeed, on the continent of Europe, these heavy soils are distinguished by the appellation of "good wheat land." But in tracing the peculiarities of soil which are best for the production of this staple, we shall only refer to the western portion of our own State. It would appear that the most valuable proceeds from the mingling of the arenaceous products of the Medina sandstone, with the disintegrating rocks of the Niagara group, and overlying shales. Thus, on the north, near Lake Ontario, the sandy ingredients appear to be in the greatest abundance; but as we proceed south, the soil gradually assumes a more argillaceous character, and we find in the valley of the Genesee, probably, the finest wheat region, for its extent, in the world. Whatever may be the nature of the soil, it should be the aim of the agriculturist to grow full crops—a consummation greatly to be wished for among a great majority of the farmers of this country, and one which probably has been brought home to them, by the great demand for breadstuffs, and the prevailing high prices of the present moment.

According to the census of 1850, the wheat crop

of the United States for that year amounted to 100,485,944 bushels, showing an increase over the product of 1840 of 15,662,672 bushels. Owing to the extraordinary political events that are at present convulsing the old world, and from various other causes, which have created an increased demand for breadstuffs at highly remunerative rates, it is readily conceded that, in this country, at the present time, there is at least one-fifth more ground under cultivation with this cereal, than was ever before known. Well informed individuals calculate from the present appearances (May 8th) of the crop, that should there be no general devastation from the various destroyers (insects, fungi and drought), it will be perfectly safe to estimate the yield for 1855 at 130,000,000 bushels, of the value of at least \$150,000,000. Should efforts to insure full crops, similar to those used by the agriculturists of Great Britain, be universally adopted by our American farmers, there can be no doubt but that the product would be increased one-third; and to impress this startling fact was one of the objects of this paper. Partial, and sometimes extensive failures, will but too often occur; and to neglect making the best known preparation, or even to prepare for half a crop only, is an ill-judged notion, and has a direct tendency to unremunerative farming. In fact, during the preparation of this article, we were informed by B. P. Johnson, Esq., Secretary of the New York State Agricultural Society, that during the great drouth of 1854, the loss occasioned by it, to the wheat crop in this State alone, was \$9,000,000. But that in every case where care had been taken to conform with a proper system of cultivation, in regard to drainage and other desirable preparations of the soil, the crops were but slightly, if any, affected by the scourge. Will our agriculturists make a note of this fact, and in their exertions remember that, to insure a full yield of the best quality of grain, they must study the characteristics of the materials (soil, seed, etc.) they expect to produce it from, and, then labor assiduously for the accomplishment of their purpose, and in nineteen cases out of twenty their efforts will produce the desired result.

We deem it unnecessary to recommend any special variety, or to give a dissertation on the various kinds and qualities of wheat. The circulation of this journal being distributed over such a large portion of the country, comprising so many differences in the temperatures of the several districts, that probably in many cases the variety advised would be unsuitable. The three specimens depicted at the head of this article, are much valued in New York, and many of the middle and Western States, but the intelligent cultivator must judge from actual experience those kinds best suited to his particular section. Again, the standard works on this all-important subject—agriculture—is within the reach of all who choose to possess them, and the press, exclusively devoted to that portion of economy, is daily teeming with valuable hints in all its departments, and the experienced and intelligent farmer will readily admit that every cent expended for their purchase returns an hundred fold.

We have capital illustrations of the value of experiment in the culture in wheat, in the results of the great London exhibition of 1851. Perhaps the best specimens of wheat examined was, that from South Australia, although it was admitted

that some of the varieties of the Spanish, and our Genesee, were very little, if any, inferior. Many of the English farmers supposed that all they would have to do to obtain the same quality of grain on their farms, was to procure the seed from Australia, and sow it in England. As has been since demonstrated, there never was a greater mistake. The wheat of Australia was not a peculiar kind of wheat; it had no particular constitutional characteristics by which it might have been distinguished from the most popular varieties that was already in use in England. Its quality was owing to purely local conditions,—that is to say, the peculiar temperature, the brilliant light, the soil, and those other circumstances which characterize the climate of Australia, where it was produced. There is no doubt of the fact, that wheat can be affected by climate, independent of its constitutional peculiarities; but it does not follow that wheat is not subject to constitutional peculiarities like other plants. There are some kinds of wheat, do what you may with them, will retain a certain quality, varying slightly with the circumstances under which they are produced, as per example: there was at the exhibition samples, especially one of Revitt wheat, of a very fine description, and greatly superior to the ordinary kinds of Revitt, that appeared in the market. This clearly shows that Revitt wheat of a certain kind and quality is better than Revitt of a different kind, both being produced in the same country, so that circumstances being equal, we have a different result, owing to some constitutional peculiarities of race.

But there is one question of the highest interest, which has been more distinctly brought out by the above mentioned Exhibition than it has ever been before. We quote from Dr. Lindley's lecture: "We all know the effect of hybridizing, or crossing the races of animals; this may be done in the vegetable kingdom. We are all aware that our gardeners are skilful in preparing, by such means, those different varieties of beautiful flowers and admirable fruits which have become common in all the more civilized portions of the world; but no one has paid much attention to the point as regards cereal crops. Yet it is to be supposed, that if you can double the size of a turnip, or if you can double the size of a rose, or produce a hardy race of any kind from one that is tender, or the reverse, in the case of ordinary plants, you should be able to produce the same effect when operating on cereal crops. It so happens, however, that the experiment had not been tried, except on the most limited scale, and to what extent it may be carried has been more brought out by this Exhibition than it ever was before. In the last treatise on this subject by Dr. Gartner, a German writer, who has collected all the information it was possible to procure relating to the production of hybrids in the vegetable kingdom, the author declares that, as to experiments on cereal plants, they can hardly be said to have had any existence. The Exhibition has, nevertheless, shown us that they have been made, and proves distinctly that you may operate on the constitutional peculiarities of wheat, just as you may on the peculiarities of any other plant. For instance, Mr. Raynold of Larvastreke, who obtained, in 1848, a gold medal from the Highland Society for experiments of the kind, sent to the Exhibition a box, which contained a bunch of *Hopetoun wheat*, a white variety, and a bunch of *Piper's thickset wheat*, which is

red. The latter is coarse and short strawed, and liable to mildew, but very productive. Mr. Raynbird desired to know what would be the result of crossing it with the Hopetoun wheat, and the result was shown in the form of four hybrids, obtained from these varieties. The new races thus obtained are intermediate between the two parents,—the ears are shorter than in the Hopetoun, and longer than in the thickset wheat; in short, there is an intermediate condition plainly perceptible in them throughout. And it appears from the statement of Mr. Raynbird, that these hybrid wheats, which are now cultivated in this country, have succeeded to a satisfactory extent, yielding forty bushels to an acre. But in this instance, as in some others, the essential part of the question is not the number of bushels produced per acre, but to show that you may affect the quality of cereal crops, as you may affect animals and other plants. Mr. Maund, an intelligent gentleman residing at Bromsgrove in Warwickshire, has done much more than Mr. Raynbird, for he has obtained a greater variety of results. Mr. Maund has been occupied for some years past in the endeavor to ascertain whether something like an important result cannot be produced upon wheat by muling, and he exhibited the specimens before us in evidence of what may be done. You will observe, that sometimes his hybrids are apparently very good, and sometimes worse than the parents, as we know is always the case. When you hybridize one plant with another, you cannot ascertain beforehand with certainty what the exact result will be, but you will take the chance of it, knowing very well that out of a number of plants thus obtained, some will be of an improved quality. In the present specimens, in each instance, the male parent is on the left hand, the female on the right, and the third specimen shows the result of combining the two kinds: a better illustration could not be desired. Here is a hybrid considerably larger than the parents, and in the next instance one considerably shorter and stouter. In another example, you see a coarse variety gained between two apparently fine varieties—that is, perhaps, a case of deterioration. In another example, you have a vigorous wheat on the left, and a feeble one on the right, while one much more vigorous than either is the result. On the other hand, we have some anomalous cases, in which the effect of hybridizing has been to impair quality. This is a very important case, well made out, because the moment you saw that by mixing corn, as you mix other things, you obtain corresponding results, there is no reason to doubt that an ingenious person, occupying himself with such matters, will arrive at the same improvements in regard to varieties of wheat, as have already been obtained in the animal kingdom, and in these parts of the vegetable kingdom which have been so dealt with." Here is a brilliant opportunity for a display of that inventive genius and ingenuity, for which we are celebrated as a nation. And we trust we shall soon be enabled to announce, that experiments, by American cultivators, have produced hybrid wheats, quite as important and beneficial, as those generated by our elder brothers on the other side of the Atlantic.

The three specimens of wheat, which are illustrated on the first page of this article, are from varieties presented us at the rooms of the State Agricultural Society, at Albany.

No. 1, is the *Kentucky White-bearded, Canada Flint, Hutchinson Wheat*. In many sections this has become a favorite variety. Some persons object to it, on account of the bran being thick, and that it spreads but little, therefore requiring more seed. This latter, however, cannot be regarded as an objection to the wheat. Its straw is stronger; and hence on rich loamy lands, it will succeed better than those with a weaker straw: the latter, too, having more substance, the grain matures, or fills out, after it has been cut. The berries are round, short, and white; weighs 60 to 65 pounds to the bushel; flour very good, but not equal to the white flint.

No. 2, *Soules Wheat*. This is a favorite variety, and is supposed to be composed of the Old Red-chaff and White-chaff bald. The latter more generally known at the South as the "*Virginia White May*." The berries are large, plump and white, stand out well from the ear, shells easy, and yields a very superior flour. Its early maturity makes it still more valuable. It weighs about 63 pounds to the bushel, and has a specific gravity of 1.333.* This is no doubt an excellent wheat, and we have conversed with several well-known agriculturists, who say, taking all things into consideration, they prefer it even to White Flint, or any other variety.

As the Soules Wheat is such a general favorite, we have determined to give its analysis:—

		Calculated on dry matter. (68.36)
Starch.....	62.28	
Sugar and Extractive Matter, with a little acid formed during analysis.....	6.40	7.023
Dextrine, or Gum.....	1.21	1.328
Epidermis.....	7.50	7.9.8
Matter dissolved out of epidermis and other bodies insoluble in water and boiling alcohol, by a weak solution of caustic potash.....	6.82	7.438
Oil.....	1.82	1.118
Gluten.....	4.51	4.118
Albumen.....	1.67	1.833
Casein.....	trace.	trace.
Water.....	9.79	
	160.91	100.000

The gluten in the above analysis is small, though thought correct. The matter insoluble in water, was digested in successive portions of boiling alcohol for six hours, till nothing more was taken up. The matter insoluble in water and boiling alcohol, was digested in a weak solution of caustic potash, which took up over 7 per centum of the dry grain; which, if albumen, increases that body to a large per centage. The gluten and starch agree nearly with most of the Winter wheat from the Genesee district, but albumen and epidermis are much greater.

PROPORTIONS.		
Per centage of Water.....	9.799	
dry matter.....	90.210	
" ash.....	1.720	
" ash calculated on dry matter.....	1.9.48	

No. 3, *Mediterranean Wheat*. This is supposed to be one of the most hardy varieties. Its principal recommendations are, that it is early, heavy, and escapes all disaster, the fly not excepted. The principal objections to it, are its dark color and

* The true weight of wheat is determined by its specific gravity. The weight of a bushel of wheat will vary with the size of the kernel, and from other circumstances; while its relative weight, or that found by comparing it with an equal bulk of water at a given temperature, depends upon its composition. The heavy varieties, or those with a high specific gravity, contains more gluten than the light; the latter containing more starch.

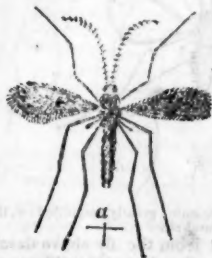
inferior flour. It is heavy, having a specific gravity of 1.360. It is bearded; shells very easily, if suffered to stand until ripe. It is not cultivated in those districts where the better kinds succeed well.

It should be remembered that to the influence of soil and climate we are indebted for many varieties of wheat which possess peculiar characteristics, or in which there is an excess of the proximate elements over the others. Gluten is largely developed in some, and starch in other varieties. Some are protected by a thick cuticle, which form the brand; in others, it is thin and delicate. The former are dark colored usually; the latter, white. Some are armed with stiff and rigid awns; others are awnless. *Silex* is more abundant in some than in others. Those in which this element is full proportioned, stand erect and never lodge. Even in the course of a few years' culture, changes occur in the constitution of wheat, which are easily observable. Thus the Mediterranean variety—last described—with a judicious cultivation, in a few years becomes assimilated to the more delicate and whiter varieties.

We now turn to the destroyers and diseases of wheat, which was the main object of the composition of this paper, and if the experience and suggestions here placed before our readers, are the means of aiding one farmer in saving his crop—that may be attacked with either of them—we shall feel abundantly compensated for our labor.

No other insect of the tens of thousands that teem in our land, has received a tithe of the attention, or been chronicled with a tithe of the voluminousness that has been assigned to the

Hessian Fly, of which it has been aptly said, in reference to their destruction of our wheat crops, that it is more formidable than would be an army of twenty thousand Hessians, or any other twenty thousand hirelings, supplied with all the implements of war. This fly (*Cecidomyia destructor* of Say) is an European insect, and has been detected in Germany, France, Switzerland, and Italy,



Hessian Fly (male, magnified).—From a young specimen, having the fulvous sutures of the abdomen wide. a The natural dimensions.

where it at times commits severe depredations on the wheat crops. Its ravages are alluded to as far back as the year 1732. It was brought to this country, probably in some straw used in package by the Hessian soldiers, who landed on Staten and the West end of Long Island, August, 1776, but did not become so multiplied as to severely injure the crops in that neighborhood, until '79. From thence, as a central point, it gradually extended over the coun-



Hessian Fly (female, magnified).—From an older specimen, having the fulvous sutures narrow and in part obliterated.

try in all directions, advancing at the rate of from ten to twenty miles a year. Most of the wheat crops were destroyed by it, within a year or two of its first arrival at a given place, and its depre-



Appearance of a healthy (*), and of a diseased (†) shoot of wheat in autumn, the worms lying at (b). a, ventral view of the "flax-seed" or larva state.

dations commonly continued for several years, when they would nearly or quite cease; its parasitic insect enemies probably increasing to such an extent as almost to exterminate it. It is frequently reappearing in excessive numbers in one and another district of our country, and in addition to wheat, injures also barley and rye.

There are two generations of this insect annually. The eggs resemble minute reddish grains, and are laid in the creases of the upper surface of the leaf, when the wheat is but a few inches high, mostly in the month of September. These hatch in about a week, and the worm crawls down the sheath of the leaf to its base, just below the surface of the ground, where it remains, subsisting upon the juices of the plant, without wounding it, but causing it to turn yellow and die. It is a small white maggot, and attains its growth in about six weeks. It then changes to a flaxseed like body within which the worm becomes a pupa the following Spring, and from this the fly is evolved in tenor



Wheat stalk, sheath broken away, showing the worm on its way down.

twelve days. The fly closely resembles a mosquito in its appearance but is one-third smaller, and has no bill for sucking blood; it is black, the joints



of the body being slightly marked with red. It appears early in May, lays its eggs for another generation, & soon perishes.

The worms from these eggs nestle to

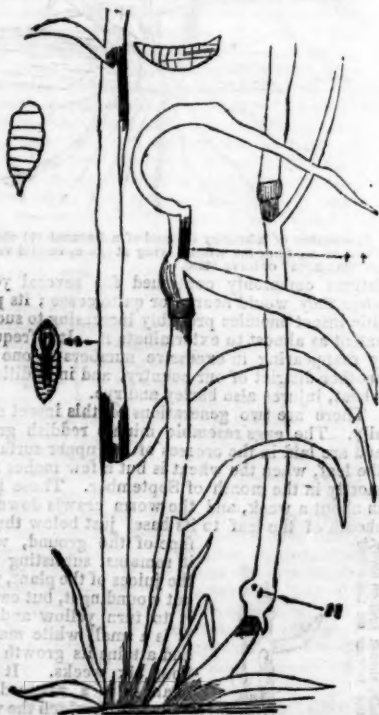


the lower joints of the stalks, weakening them, and causing them to bend and fall down from the weight of the head, so that toward harvest, an infested field looks as though cattle had passed through it.

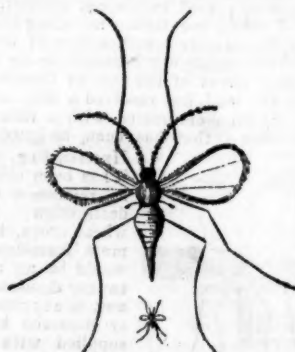
Wheat can scarcely be grown, except on a fertile soil, in those where this insect is abundant. The sowing should be deferred until about the last of September, the season being then passed, when the fly usually deposits its eggs. If at any time in Autumn the eggs of the insect are observed to be

profusely deposited upon the leaves, the crop should be speedily grazed down by sheep and other stock, or if this cannot be done, a heavy roller should be passed over it, that as many of the eggs as possible may be crushed or dislodged thereby. One or the other of the same measures should also be resorted to in the Spring, if the same contingency occurs; or if the worms are, at a later date, discovered to be numerous at the first and second joints of the young stalks, the experiment may be tried of mowing, as close down as possible, the most infested portions of the field. Where the soil is of but medium fertility, a resort to some of the hardier varieties of wheat, which are known to be in a measure fly-proof, may be advisable. Perhaps, after all, the most effective manner of destroying this pest, is to burn the stubble, before plowing for the next crop. It has been urged that, as this also annihilates the parasites that prey upon the fly, some of the other modes would be preferable; but from our own experience, we feel constrained to strongly recommend the fire remedy.

Next following the Hessian-fly is the clear-winged WHEAT-FLY (*Cecidomyia Trititæ*). This



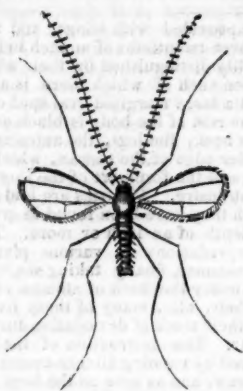
- Appearance of a healthy (H) and two diseased stalks of wheat at harvest time. (H) stalks broken from being weakened by worms. (H) base of sheath swollen from worms having laid under it, and perforated by parasites coming from those worms: a, lateral view of the "flax-seed" or larva case: b, dorsal view of the dormant larva, taken from the larva case: c, ventral view of the pupa.



Clear Winged Wheat-Fly, female; greatly magnified: a, the natural size.

species is very distinct from the fly above described; its habits sufficiently show this difference; and the remedies which are in some measure palliative in the case of the hessian fly are valueless against this. Among its peculiarities, some of the most remarkable are that it deposits its eggs in the wheat head, and undergoes its metamorphoses in the soil, and that the mature animal is engaged longer in the work of depositing its eggs than the hessian-fly. These distinctions must govern our attempts to guard against the attacks of these insects. The defalcations they sometimes occasion is quite enormous. We have heard of many cases where it was equal to 50 per cent. of the whole crop; and when evidences of their presence is discovered in a district, prompt measures should be taken for their destruction.

The wheat-fly possesses the following characteristics: body, orange; wings, transparent, rounded at the tips, ciliate, or fringed with minute hairs; length, about one-tenth of an inch. Its general appearance is that of an orange-colored gnat.—One can get the most clear and definite idea of the characteristics of this fly by being told that it looks precisely like the wheat-worm, with wings and legs added.



Clear-Winged Wheat-Fly, male; magnified.

The first account of this insect was published in 1820. It was first observed in our State in 1828. Its first appearance in this country was in the Eastern section; since several of the Eastern and Middle States and the Canadian Provinces have been visited by it. The cultivation of wheat was suspended for many years, in consequence of its injurious attacks.



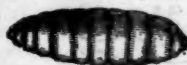
Clear-Winged Wheat-Fly, at the egg; magnified.

The time of the appearance of this fly varies according to the situation of the country, being in some places in June, and in others late in August. The first half of July, however, is the time when the largest number of eggs are deposited; a period which, in New England, would find the spring and winter grains in the best state for receiving them. The insects are active in the morning and evening, and appear in swarms; but during the day, when the sky is cloudless, they conceal themselves among the grain and grass. After about eight days, the eggs



Kernel of wheat, with the husk, and the worms feeding upon its pulp.

that have been deposited in the heads of the grain are hatched. The maggots are orange color, and attain their growth in about twelve or fourteen days; they are about the eighth of an inch long, but their size is not uniform. Their number is



Pupa, greatly magnified.

also variable, as many as forty being sometimes found on a single plant, and at other times two or three only. They seem to be influenced by exposure; for in hilly places, where the grain is exposed to the wind, they are much less numerous than in sheltered spots.

The injury that wheat sustains by the presence of this fly depends upon its state of forwardness. As the worm is unprovided with boring instruments it is principally during the soft state of the grain that it has the power to do most hurt. If the egg is deposited so as to be hatched when the plant is

in blossom, it is then capable of inflicting the greatest injury; for at this time it is supposed to subsist on the pollen, and may therefore prevent the fertilization of many kernels in the same head; and then, also, it obtains the milky fluid that begins to be formed at this period, and is now accessible through the softness of the skin or epidermis of the grain. But if the time of the deposition of the egg is such that it becomes hatched after the plant has flowered, and the kernel has acquired some considerable hardness, the worm is incapable of absorbing nutriment, and perishes for want of food.



Wheat-head, with the chaffinch getting at the worms leaving the grain, as at "x".

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The worms acquire their full size and perfection, cast their skins and descend to the ground in August. They bury themselves in the soil to the depth of about an inch, where they remain through the winter. There is, therefore, but one brood in a season. The worm is speedily changed into a pupa, in which state it remains in the ground until ready to issue therefrom, in June or July of the following year, in the imago state, or that of the perfect fly.

The means that have been proposed to destroy this kind of wheat-fly are numerous; if any of them are to be effectual, it is evident they should be resorted to over the whole district infested. Among the remedies which seem to have been at least partially successful, is that of the abandonment of the cultivation of winter wheat, for the substitution of the spring variety and late sowing. This remedy operates on the principle of starvation, and would probably be completely successful, were it not that grasses and other grains beside wheat are suitable recipients for the eggs of the insect, and furnish nutriment for its progeny. Again, it has been recommended to smoke them out. To effect this, the flies must be attacked in the evening, when they rise from their lurking places in the depths of the grain. Brimstone, mingled with other combustible matter, should be burned in a position to give them the full benefit of the smoke and vapor when they rise upon the wing and hover over the grain. Another plan is to sow quick-lime over the field when the heads of the grain are moist. This latter may be repeated several times. Again, it has been recommended to net them as follows: take a long rope attached to a wide-open, tight

bag, and let two men, one at each end of the rope, pass through the field, dragging the open, wide-mouthed net over the heads of the wheat. Go over the whole field in this way, and millions of the fly will be caught, if the net or bag is properly managed. Deep ploughing is a remedy that has been tried and often found successful. This, of course, is to be resorted to after harvest; the object of this is to bury the insect so deep, that they will be unable to find their way out of the ground the next season.

The wheat and corn fields of the South and West have often suffered severely from the depredations of certain minute insects, which have long been known under the appellation of THE CHINTZ, or CHINCK BUG, (*Lygaeus leucopterus*) of Say. In the State of Virginia, more especially, this chinck bug has been found to be a much more formidable enemy than even the hessian-fly or wheat-fly. From late accounts we find that it is steadily extending its ravages over the whole wheat range—specimens having lately been discovered in this and the Eastern States, and we deem it not improbable that it may yet become troublesome in districts North and East, where, as yet, our practical agriculturists are entirely unacquainted with it. In anticipation of such a disastrous event and to gratify a curiosity that has been expressed concerning these offensive insects, we here bring forward such information in relation to them, as has come under our scope.

They were first described as early as the year 1788, and were at that time supposed to be apterous, as they are in that state while performing their ravages on the crops. They then much resemble in scent and color the bed bug.

The young individuals are at first a bright red, changing with age to brown and black. They travel in immense columns, from field to field, like locusts, destroying everything as they proceed. In the southern States they make their appearance in the month of May, and in the West about the middle of June. They attack the wheat by attaching themselves to the stalk, from which they extract the sap, to the last particle. The consequence is, that, at harvest time, not only the grain, but the straw also, is nearly worthless. About the time the wheat is ready to cut, these insects arrive at their perfect state, when they are not apterous,

but are provided with wings, and then measure about three-twentieths of an inch in length. They are readily distinguished by their white wing-covers, upon each of which there is a short central line and a large marginal oval spot of a black color. The rest of the body is black and downy, except the beak, the legs, the antennæ at base, and the hinder edge of the thorax, which are reddish-yellow, and the fore-part of the thorax, which has a grayish lustre. The eggs are laid in the ground, in which they have been found in great abundance at the depth of an inch or more. They continue their depredations on various plants during the whole summer, finally taking shelter during the winter under the bark of stumps and logs, under large clods, etc., many of them living to recommence their work of devastation during the following year. The destruction of the chinck bug is attempted by running ditches across the field filled with straw, and as soon as the bugs are seen thereon, setting fire to it. Many are exterminated by occasionally burning the dry leaves in the forest upon which they settle. No doubt some of the remedies used against the hessian and wheat flies would be valuable against the chinck bug.

In the Eastern States another small insect has been discovered in the ear of growing wheat. It seems to agree with the account of the *Thrips cerealium*, which sometimes infests wheat in Europe to a great extent. This insect, in its larva state, is smaller than the wheat maggot, is orange colored, and is provided with six legs, two antennæ, and a short beak, and is very nimble in its motions. It is supposed to suck out the juices of the seed, thus causing the latter to shrink and become what the English farmers call pungled. This little pest may probably be destroyed by giving the grain a thorough coating of slacked lime.

Stored grain is exposed to much injury from the depredations of two little moths, which, on examination, turns out to be identical both in this country and Europe; but not having been thoroughly described by our home entomologists, we are obliged to rely on the accounts given by foreign writers.

THE GRAIN MOTH (*Tinea Granella*), in its perfect state, is a winged insect, between three and four-tenths of an inch long, from the head to the

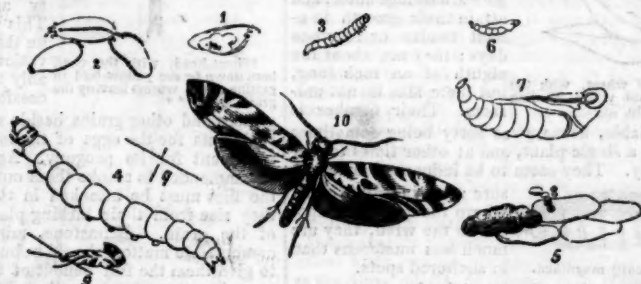


Fig. 1. A grain of wheat opened, to show the cavity in which the caterpillar of *Tinea granella* had fed, with the excrement at the apex. Fig. 2. Several grains united by the same caterpillar. Fig. 3. The caterpillar of *Tinea granella*. Fig. 4. The same magnified. Fig. 5. A group

of the cocoons spun by the same. Fig. 6. The chrysalis taken out of a cocoon. Fig. 7. The same magnified. Fig. 8. A chrysalis sticking in a cocoon after the moth was hatched. Fig. 9. *Tinea granella* at rest. Fig. 10. The same flying, and magnified. q. The natural dimensions.

tip of its wings, and expands six-tenths of an inch. It has a whitish tuft on its forehead; its long and narrow wings cover its back like a sloping roof, are a little turned up behind, and edged with a white fringe. Its fore-wings are glossy like satin, and are marbled with white and gray, light brown, and dark brown and blackish spots, and there is always one dark square spot near the middle of the outer edge. Its hind-wings are blackish. Some of these winged moths appear in May, others in July and August, at which time they lay their eggs; for there are two broods of them in the course of the year. The young from the first laid eggs come to their growth and finish their transformations in six weeks or two months; the others live through the winter, and turn to winged moths in the following spring. The young moth worms do not burrow into the grain, as has been asserted by some writers, who seem to have confounded them with the Angoumois grain-worms; but, as soon as they are hatched, they begin to gnaw the grain, and cover themselves with the fragments, which they line with a silken web. As they increase in size, they fasten together several grains with their webs, so as to make a larger cavity, wherein they live. After a while, becoming uneasy in their confined habitations, they come out and wander over the grain, spinning their threads as they go, till they have found a suitable place wherein to make their cocoons. Thus wheat and the other cereals, all of which they attack, will be found full of lumps of grain cemented together; and when the worm is very numerous, the whole surface of the grain in the bin will be covered with a thick crust of webs and of adhering grains. These destructive corn-worms, as they are sometimes designated, are really soft and naked caterpillars, of a cylindrical shape, tapering a little at each end, and are provided with sixteen legs, the first three pairs of which are conical and jointed, and the others fleshy and wart-like. When fully grown, they measure four or five-tenths of an inch in length, and are of a light ochre or buff color, with a reddish head. When about six weeks old, they leave the grain, and get into cracks, or around the sides of corn bins, and each one makes itself a little oval pod, or cocoon, about as large as a grain of wheat. The insects of the first brood, as before said, come out of their cocoons, in the winged form, in July and August, and lay their eggs for another brood; the others remain unchanged in their cocoons throughout the winter, and take the chrysalis form in March or April following. Three weeks afterwards, the shining brown chrysalis forces itself part way out of the cocoon, by the help of some little sharp points on its tail, and bursts open on the other end, so as to allow the moth therein confined to come forth.

From various statements, there is no doubt but that this grain moth prevails, to a greater or less extent, in all parts of the country, and that it is generally taken for the grain weevil, from which, of course, it is entirely a distinct species. Its habits, probably, are somewhat varied; for, although most writers on its history agree in saying that the insect leaves the grain and conceals itself in crevices of the granary when preparing to make its cocoon, others expressly state that it undergoes its transformations in its web among the grain.

The other of these moths is known as the Angoumois MOTH (*Anacampsis* [*Butalis*] *cerealella*). For more than a century this insect has prevailed

in the western parts of France, and has gradually been extending in several directions. In some provinces in that country it has been found much more destructive than the species above described. In the province of Angoumois it continued to increase for many years, till at length the attention of the government was directed to its fearful devastations. This was in 1760, when the insect was found to swarm in all the wheat fields and granaries of Angoumois and the neighboring provinces, and the afflicted inhabitants were thereby deprived not only of their principal staple, wherewith they were wont to pay their annual rents, their taxes, and their tithes, but they were threatened with famine and pestilence for the want of wholesome bread. This insect, in its perfect state, is a little moth, of a pale cinnamon brown color above, having the lustre of satin, with narrow, broadly-fringed hind wings of an ashy or leaden color, two thread-like antennæ, consisting of numerous bearded joints, a spiral tongue of moderate length, and two tapering feelers, turned over its head. It lays from sixty to ninety eggs, placing them in clusters of twenty or more on a single grain; from these are hatched, in from four to six days, little worm-like caterpillars, not thicker than a hair, these immediately disperse, and each one selects for itself a single grain, and burrows therein at the most tender part, commonly the place whence the plumule comes forth; remaining there concealed, it devours the mealy substance within the hull, where the destruction goes on so secretly as only to be detected by the softness of the grain or the loss of its weight. When fully grown, this caterpillar is not more than one-fifth of an inch long. It is of a white color, with a brownish head, and it has six small jointed legs, and ten exceedingly small wart-like prop legs. Having eaten out the heart of the grain, which is just enough for all its wants, it spins a silken web or curtain to divide the hollow, lengthwise, into two nearly equal parts, the smaller containing the rejected fragments of its food, and the larger cavity serving instead of a cocoon, wherein the insect undergoes its transformations. Before turning to a chrysalis it gnaws a small hole nearly, or quite, through the hull, and sometimes also through the chaff covering of the grain, through which it can make its escape easily when it becomes a winged moth. The insect of the first, or summer brood, come to maturity in about three weeks, remain but a short time in the chrysalis state, and turn to winged moths in the autumn, and at this time may be found, in the evening, in great numbers, laying their eggs on the grain stored in barns and granaries. The moth-worms of the second brood remain in the grain through the winter, and do not change to winged insects till the following summer, when they come out, fly into the fields in the night, and lay their eggs on the young ears of the growing grain. Although, there seem to be two principal broods in the course of a year, we are not to understand that these are the only ones, for French writers inform us that others are produced during the whole summer, and that the production of the insect is accelerated or retarded by differences in the temperature of the air. When damaged grain is sown it comes up very thin; the infected kernels seldom sprout, but the insects lodged in them remain alive, finish their transformation in the field, and in due time come out of the ground in the winged form. Although the above is the French account of this

moth, we feel confident, that, from the repeated examinations of our American writers, they are identical with the moth of this country, and, perhaps, hereafter their mode of introduction among us may be as satisfactorily accounted for, as that of the hessian-fly.

It has been proved by experience that the ravages of the two kinds of grain-moths, whose characteristics we have just described, can be effectually checked by drying the damaged grain in an oven, or kiln, and that a heat of 167°, Fah., continued during twelve hours, will kill the insects in all their forms. Indeed, the heat may be reduced to 104°, with the same effect, but then the grain must remain exposed to it for the space of two days. Insect-mills, somewhat like coffee-roasters, on a large scale, have been invented in France, for the purpose of heating and agitating the infested wheat by which the eggs and larvæ of these moths are destroyed. Fumigation, in close vessels, with the gas of burning charcoal, is found to be an effectual remedy, and we have assurance that this process neither imparts any bad flavor to the grain, nor does it impair its power of vegetation. Early threshing and winnowing is also recommended. Machine threshing is decidedly preferable, and the process, if possible, should not be deferred beyond the first of August. Passing through a rubbing-mill is beneficial, and if the wheat is not ground at once, it should be deposited in tight bins or casks. If a large surface of grain be exposed in the barn or granary, or the mill, during the season of the moth, it will assuredly become affected; for, in the night, when these insects are most active and on the wing, they will light on the exposed surface, and deposit their eggs, which, in a few months of hot weather, will produce numerous and successive broods of moth worms.

Of all the destroyers of wheat, probably none is more extensively known by name than the natural **GRAIN WEEVIL** (*Culandra granaria*); still we think we shall be sustained in the assertion that among



Granary weevil, magnified.

agriculturists generally, not one in a thousand of the class referred to, actually understand, either its character or appearance. In fact, we have consulted many of the more educated class of farmers, who gave it as their opinion, that the greatest havoc of this insect was committed while the grain was in the ripening field.

The granary weevil, in its perfect state, is a small beetle of a pitch red color, about one-eighth of an inch long, with a slender snout slightly bent downwards, a thorax, coarsely-punctured and very long thorax, constituting about one-half the length of the whole body, and wing-covers that are furrowed, and do not entirely cover the tip of the abdomen. This little insect, both in its beetle and grub state, devours stored wheat and other cereals, and often commits much havoc in granaries, brew-houses, etc. The power of multiplication of this weevil is truly wonderful, it having been demonstrated that a single pair of them can reproduce above six thousand descendants in a single year; and they are sometimes so numerous in a grain heap, that they destroy it altogether, leaving nothing but the chaff.



A grain of wheat opened, showing ves. the weevil at work inside.

After the sexes have paired, the female makes a hole in a grain of wheat with her rostrum, and deposits an egg. These holes are not perpendicular to the surface of the grain, but oblique, or even parallel, and are sopped with a species of gluten of the same color of the corn. Sometimes two eggs are deposited in the same kernel, and the larvæ of the twins are just as plump as those who have the good fortune

to have a whole grain to themselves. From the egg is hatched in due time a small footless grub, which, during its growth, eats out the entire contents of the grain, and when lodged in the grain, is perfectly sheltered from all injuries of the air, because its excrements serve to close up the aperture; so there is no use of stirring the grain as nothing can incommode it. It is very white—has the form of an elongated soft worm, and the body is composed of nine prominent rounded rings; it is nearly a line in length, with a yellow rounded head, provided with proper instruments for gnawing the grain. When the larvæ has eaten all the flour, and it is arrived at its full growth, it remains in the envelope of the grain, where it is metamorphosed into a nymph, of a clear white and transparent color; the proboscis and antennæ can readily be distinguished; but it gives no sign of life, except when disturbed, and then but a slight movement of the abdomen. Eight or ten days after, the perfect insect eats its way out; and immediately commences preparation for another brood. These insects are effectually destroyed by kiln-drying the



Nymph, or pupa of the Granary weevil magnified. ved, is said to be exempt from attack.

A correspondent of the "Mark-lane Express," in speaking of this grain weevil, says:—"Some years ago we found a house overrun with weevils; after numberless attempts to destroy them, we were led to observe that they were almost entirely on the south wall (our rainy side,) and that they appeared to breed in incredible numbers, in an unusually damp spot or corner. Taking the hint, we cased the wall on the outside with slate, and made the house in every respect perfectly dry, and in a short time the weevils died off and disappeared. Since adopting this precaution, we have not the least trouble, and have only been reminded that such an insect exists, when an accidental spot of damp has appeared to generate them again. We think ourselves, therefore, entitled to say, that these insects require moisture; and that if the grain and granary, as both ought always to be, are dry and healthy, weevils will not long remain. This plan bears the merit of costing less than nothing, because the injury that wheat sustains directly from damp, is more than equivalent to the expense of keeping premises dry, leaving its indirect influence in the generation of weevils, out of the question."

An experiment was lately tried at the Patent Office, at Washington, to destroy the weevils with chloroform, and it would appear that results satisfactory to the experimenter was arrived at; but should there be merit in the application, probably the process will be much too expensive for practi-

cability. It might, however, do well in some cases.

Another species of beetle that preys upon wheat, is the CORN SILVANUS, (*Silvanus Surinamensis*). From the specific name, it may be inferred that this little beetle has been imported originally from Surinam. It is now a constant inhabitant of our stores and warehouses. It commits its depredations much in the same manner as the last, and with which it is often confounded—although a separate and distinct species.

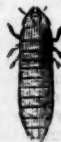


The corn silvanus, magnified.

The corn silvanus is only one line and a quarter long, and very narrow; it is flat and of a rusty brown color, thickly and coarsely punctured, and sparingly clothed with short yellow depressed hairs. The larva is a little depressed yellowish white worm; it is composed of a tolerably large head, with two pointed jaws, and two little horns, and of twelve transverse segments; the tail is somewhat conical, and it has six articulated legs. The nymph, is of the same color; the head is bent downwards; the thorax is sub-orbicular with three ridges; the sides with a few short spines; scutellum elongated; elytra wrapped over the sides and striated: abdomen with distinct segments; the sides with short thick points like the thorax.

This insect attacks all of the cereals, and is also found under the bark of trees, old stumps, etc. The remedies recommended for the granary weevil, will also be found available against this.

We now proceed to notice another class of destructives—the PARASITIC FUNGI. This class of plants derive their nutriment from some kind of organized matter, none of them growing directly from the soil, water, or atmosphere, like other plants. They are of great importance in the economy of nature, by assisting in the decomposition of decaying animal and vegetable substances. A few of them appear to grow on healthy subjects; but these, possibly, may most frequently have originated on a part where disease or decay had already effected some alteration in the tissue, and then, by spreading rapidly from thence, they may afterwards have caused the decay of other parts also. None of this tribe of plants attain to any great size, when we compare them with many species of flowering plants. Among fungi we find a multitude of extremely minute species, which it needs the skill of an experienced microscopic observer to detect and examine; and it is also among the very lowest of the several groups into which these minute fungi are classed, that we must search for the few species that produce the fatal diseases in wheat we are about to describe. But if these fungi are in themselves so exceedingly small, how much more so are those reproductive bodies analogous to the seeds of flowering plants, by which they are propagated and multiplied. So very minute are these sporules (as the botanists term them), that they altogether escape observation by the naked eye, and can only be just distinguished by high powers of the microscope. Many of this kind of fungi



Larva of the above magnified.



Nymph of the same magnified.

live beneath the scarfskin, or epidermis, and within the very substance of certain plants. In the progress of their growth they raise blisters under the epidermis, and when arrived at maturity, they burst through it, and then form blotches of various colors, which are frequently orange, brown or black. These spots (or *sores*) are masses of fructification, and are surrounded by the tattered edges of the ruptured epidermis. A vast number of these fungi are known to botanists. Like parasitic animals, they are restricted in their power of attack, being able to live on certain species only, and even on particular parts only of the same individuals of these species. The flea which attacks dogs is distinct from that which annoys man. So, also, with these parasitic fungi—some are restricted to one species of plants, some to another; but, generally speaking, most of them are capable of living upon more than one species of the same genus, where, of course, we might expect the resemblance in all points to be very close. Some fungi confine their attacks to the seed, others to the stem or leaves, and some even to one side of the leaves. One of these that attacks wheat lives only on the grain, another more particularly attacks the short stalks on which each flower is seated, while some of these, of which we are about to speak, are restricted to the straw, chaff, and leaves; but all of them live at first beneath the epidermis, and not upon it. In this respect they bear a close analogy to those parasitic animals which live within the bodies of other animals, some immediately beneath the skin; others in the intestines, and others, again, within the very substance of the muscle. It is the extraordinary minuteness of the sporules (or seed-like bodies) of these fungi, which allows of their being absorbed by the roots, and probably, also, through the pores of the stem and leaves of plants; and then they are conveyed by the sap to the various parts where they are enabled to germinate, grow and fructify. The sporules appear to be everywhere dispersed through the atmosphere, ready to germinate wherever they may find a dead or living subject in a condition suited to their attack. Common mouldiness, for instance, which so readily forms on many substances in moist situations, is the most familiar example of the inconceivable numbers in which the sporules of a minute fungus are everywhere diffused. The difficulty of admitting such a universal dispersion of these sporules has induced some modern philosophers to support the old exploded theory of spontaneous generation. Of this theory, however, we may safely assert, in the present state of human knowledge, that it involves difficulties an hundred fold more inexplicable than any which attend on the opposite theory, which teaches us, that all living creatures proceed from similar organized beings, originally called into being at the fiat of the Almighty. We shall, therefore, consider these minute fungi to be plants, which proceeded from, and are capable of reproducing their kind, by means of those minute sporules with which direct observation has made us well acquainted.

The first of these fungi which we shall notice is the BUNT OR SMUT BALL (*Uredo Caries*, De Condolle — *Uredo fatida*, Bauer). The fungus which occasions this well-known and much-dreaded disease, has thus far been met with, only in grains of wheat. Its presence is readily recognized by the peculiar disgusting odor of the infected ear. It may readily be detected in the young seed, even at the earliest

stages of the flour-bud, and, when fully ripe, it most frequently occupies the whole interior of the grain, but without bursting the skin; so that the wheat retains the same size and shape, that it would have assumed, had it been perfectly sound. When examined under the microscope, the bunt-fungus is seen to consist of vast numbers of extremely minute globules, of a dark color, and which are at first attached to a mass of thread-like matter, analogous to what is termed "the spawn" in mushroom and other agaries, and which, in those plants, spread under ground, and frequently occasion the remarkable appearances, called fairy rings.

It is not easy to see this spawn of the bunt-fungus, but the little dark globules called spores may readily be detected. They may be considered analogous to the seed-vessels of flowering plants, and each of them contains a mass of almost inconceivably minute sporules, by means of which the plant is propagated.

The reproductive powers of fungi are quite beyond our powers of comprehension. Fries, one of our greatest authorities, has calculated that a particular fungus may contain 10,000,000 sporidia. M. Bauer, has actually measured the spores of the present species, and found their diameter is not more than the one-sixteen-hundredth part of an inch. A single grain of wheat, estimated at less than the one-thousandth part of a cubic inch, would, therefore, contain more than 4,000,000 such spores; but it is hardly possible to conjecture how many sporules each contains, since they are scarcely distinguishable under any very high powers of the microscope, and then appear only as a faint cloud of vapor, whilst they are escaping from the ruptured spores.

When this disease prevails, it greatly deteriorates the value of the sample,—imparting a disgusting odor to the flour, and it makes it much less fit for domestic purposes. Although the bunt-fungus confines its attacks to the young seed, it seems to be a condition essential to its propagation, that it should be introduced into the plant during the early stages of its growth, and that its sporules are most readily absorbed by the root during the germinating of the seed from which the plant has sprung. It has been clearly proved that wheat plants may be easily affected and the diseases thus propagated by simply rubbing the seeds before they are sown with the black-powder, or spores of the fungus. It is also as clearly ascertained, that if the seeds thus tainted be thoroughly cleansed, the plants raised from them will not be infected. This fact is now so well established, that in Europe, and among many well-informed farmers, in this country, a practice of washing or steeping seed-wheat in certain solutions, prevails to a great extent. Upon simple immersing the grain in water, the infected seeds float, and, on the water being poured off, nothing but the sound ones remain in the vessel. This simple process, however, is never perfectly effective, because, in threshing the wheat, many of the infected grains (smut-balls) are crushed, and the spores are dispersed in the form of a fine powder, which adheres, with considerable obstinacy, to the surface of the sound grains, by means of an oily or greasy matter found on the fungi. In order to detach them effectively, it has been considered useful to add some alkaline ley to the water in which they are washed: because oil and alkali unite and form a soapy substance, and then the spores will no longer adhere

to the surface of the grains of wheat. Lime, possessing alkaline properties, is extensively used for this purpose. Common potash, and substances containing ammonia, as the liquid portion of stable manure, have also been used. Again, strong brine, sulphate of copper, arsenic, and a variety of other materials which do not possess alkaline qualities, have been employed, which would leave the impression that all these solutions act rather by destroying the vegetative properties of the lungi, than as a means of removing them from the surface of the grains.

THE SMUT OR DUST BRAND (*Uredo Segetum*) is a disease produced by another fungus, which is often confounded with the last; and, no doubt, more prevalent on this continent, than either of the numerous diseases of wheat. The smut-fungus resembles the bunt-fungus in color and shape; but its spores are not half so large, and it possesses none of the disgusting odors which characterize the latter. Although this fungus is generally supposed to attack the grain much in the same way as the bunt-fungus, only that it more thoroughly destroys it, this is not the case; it has been proved that the smut-fungus, destroys the ear, by first occasioning the innermost parts of the flower to become abortive; whilst the little stalks on which these are seated swell and become very fleshy. The fungus then consumes the whole of this fleshy mass, and, at length, appears between the chaff scales, in the form of a black soot-like powder, the spores having burst through the epidermis of the grain. Mr. Bauer gives the dimensions of this fungus, by which it appears that the diameter of a spore is not more than the twenty-eight-hundredth part of an inch.

On some accounts this disease is not so much dreaded as bunt; the principal ones are, that the spores have generally been dispersed before the grain is cut; and, even when present in the flour, they have no disagreeable odor. It is sometimes, however, very injurious by diminishing the product. This fungus is common in most of the cereals. It is likewise observed in several grasses. Like the bunt-fungus, so, also, may the smut-fungus be kept in check, by carefully steeping the infected grain; but this process does not here appear to be so thoroughly effective as in the former case. Probably, the earlier ripening of the spores causes the sporules to disperse in the fields, and so keep up a greater out-door supply of them. If of two evils we might choose the least, it would certainly be more desirable that the wheat should be attacked by smut than bunt. It seems to be most likely that grain affected with either, cannot be very noxious, as fowls which have been fed with them receive no injury.

In regard to the precautions to be taken against bunt and smut—whatever some persons hope, when they suggest the possibility of our effectually exterminating the bunt-fungus, if a system of carefully steeping all seed wheat were to prevail universally the most sanguine calculations could never count upon the termination of the smut-fungus with any prospect of success. Since the latter does not confine its attacks to grain, but is also found in the grasses which grow in the pastures, and by the road-side, a plentiful supply of sporules will always be kept up to warrant belief that we shall never expunge this species from Flora. Still, we may feel assured that precautionary measures may materially lessen an evil which cannot be wholly avoided. Since the sporules of the two fungi which

produce bunt and smut enter the plants, they attack, by absorption, at the roots, and, since they are buried with those seeds to whose surface they have attached themselves, it is evident that too much care cannot be bestowed in procuring clean seed, or in purifying such as may accidentally be infected. It has been suggested that the farmer should cultivate a crop expressly for seed, by which a small spot could be set apart, and more carefully attended than the rest. He then would be able to weed it from every plant infected with any observable disease, and thus secure good and perfectly clean seed.

Perhaps, next in order, it will be best to describe the *Rust*, or, as it is sometimes designated, *Red-rot*, *Red-robin* and *Red Gum* (*Uredo rubigo* and *Uredo linearis*). It is believed that, under the name here quoted, agriculturists have comprehended the attack of what systematic botanists consider to be two distinct species of fungi, and which the experienced eye of the microscopic observer was alone likely to separate. Rust first appears on the blades of wheat in the Spring. The fungi form yellow and brown oval spots and blotches upon the stem, leaf and chaff; and when the spores have burst through the epidermis, they are readily dispersed. Like those of the bunt-fungus and smut-fungus, they consist of very minute grains, but their color is different, varying from orange-yellow to brown, and their shape is not so perfectly spherical, especially those of *U. linearis*, which are usually oblong. Those fungi are very common on grain and grasses—in general more abundant than any other of the grain pests. It abounds in the form of an orange powder, which exudes from the inner surface of the chaff scales, but it is scarcely, if ever, to be seen in the skin of the seed; it may also be traced in patches beneath the epidermis of the straw, but we do not observe that it bursts through the epidermis anywhere, excepting on the inside of the chaff. This disease has been proved to be identical with *Mildew* (*Puccinia graminis*). There can be no doubt that the former is only an early stage of the growth of the latter. The ripe spores are little intensely dark-brown club shaped bodies, having the thicker end divided into two chambers, each filled with sporules. They taper gradually at the base into a fine stalk. The sori (or patches of spores) are composed of multitudes of these bodies, which sometimes burst through the epidermis of the stem and leaves in such profusion that the whole plant appears to have been scorched.

On the precautions to be taken against rust and mildew, we have very little satisfactory information. It has not been clearly determined by experiment whether the sporules of rust and mildew fungi are absorbed by the roots of grain like those of the burnt and smut-fungi, or whether (which seems to be the most prevalent idea) they enter through those minute pores on the stem and leaves, which botanists term "stomata." The fungi at first make their appearance in little cavities seated immediately beneath these pores, which certainly look very much as if the sporules entered there. The stomata are naturally exhaling organs, continually discharging, under the influence of light, a large portion of the water imbibed by the root. But in moist weather this function is impeded—if, in some cases, it is not actually reversed—when it would be easy for the sporules to enter these invisible stomata with the moisture imbibed by them. The fact, however, stands in need of proof; and hitherto

the evidence is more in favor of similar fungi being imbibed by the roots of the plants which they attack. Mr. Knight, indeed, who is high authority, particularly insists upon mildew being induced by foggy weather happening at a time when the ground is particularly dry; circumstances which we may readily understand as likely to convert the stomata (or even the whole superficial tissue of plants) into imbibing organs. If the autumnal fogs really predispose wheat to the attacks of the mildew-fungus, we must agree with those who recommend the growth of early varieties in places subject to these fogs. It seems to be pretty generally admitted that spring wheats are less liable to mildew than winter wheats, and that heavy soils are less subject to it than light ones. But, at present, the information on these points are most vague and unsatisfactory. We may safely conclude that a general healthy state of the plant, without any over-luxuriance of vegetation, is most likely to secure a crop against the attacks of the rust and mildew fungi; but, that whatever tends to render the plant sickly, whether it be excess of heat or cold, drouth or wet, sudden changes of temperature, poverty of soil, over-manuring, shade, etc., etc., must be considered as a predisposing cause to these diseases. If it were clearly ascertained that a wheat crop had imbibed the sporules of the mildew-fungus early in the season, it would undoubtedly be advisable to feed it down with sheep or other cattle. The plan of mowing it as close down as possible, would also be beneficial. The rust and mildew fungi attack many grasses, and have been found in great perfection in the common reed. It is evident, therefore, that we can never expect to exterminate these fungi, but that these sporules will always be found in our fields, ready to attack grain crops whenever these are brought into a state adapted to receive their influence.

Although we have not noticed all the destructives of wheat, we have described those which we have deemed most important. Before closing, we would again impress on agriculturists generally the importance of availing themselves of the immense practical benefit science is daily placing within their reach. Chemistry and the microscope are opening fountains of knowledge that are invaluable to their calling, at once paving the way to its successful prosecution. And the fact is becoming each moment more extended, that to produce good and large crops, agriculture is an employment that requires quite as much study and experience as either of the other (so called) learned professions. But we think we hear one say, "How am I to avail myself of these benefits? what do I know of chemistry or the microscope?" Friend, in relation to the latter, we will inform you of a few significant facts. If you will procure a microscope, you will find it not only the most useful and instructive, but also the most amusing article you ever expended your money for; and that by its use, while you are acquiring information and experience of the utmost value in your business, you are constantly making a series of exhibitions that amuse and educate every individual member of your family. And thus you will become, by ocular demonstration, personally acquainted with each of the destroyers your crop may be subjected to; and by knowing the immediate cause, how much more readily can the remedy be prescribed.

One more fact. When a district is affected with the fly, bug, or worm, to insure a speedy riddance,

there must be concert of action. It is the duty of the farmer to not only use his utmost exertions, but to also urge his neighbors to do likewise; for unless there is a general extermination, the whole effort will prove fruitless.

Again a great majority of our agriculturists must give up their prejudices in regard to what they term "book learning," and get out of the old see-saw track. We remember to have had farmers tell us that "father done so, and what was good enough for him is good enough for me." Well, sir, we will admit father done so, but if your father had common sense, or his son either, he will readily admit that McCormick's Reaper, a Drill Cultivator, a Threshing Machine, a Sub-soil Plow, and many other improvements in tools, etc., are of incalculable benefit to the farmer—then how much more these valuable theories by which practical science demonstrate the why's and the wherefore's according to the immutable laws of nature. Why is it, that Judge So-and-so or Squire What-a-name, always take the premiums at the State and the County Fairs? Simple because the judge and the squire, look at the *theoretical* as well as the practical portions of farming. Will the reflecting portion of the tillers of the soil, think deeply on our few last remarks, and each man remember that it is not only his interest but his duty to raise full crops.—*United States Magazine*.

UNITED STATES AGRICULTURAL SOCIETY.

A grand national exhibition of stock—horses, cattle, sheep and swine—open to competition to all the States of the Union, and to the British provinces, will be held by the United States Agricultural Society, in the city of Boston, on Tuesday, Wednesday, Thursday and Friday, October 23d, 24th, 25th and 26th.

Twenty thousand dollars have been guaranteed by patriotic gentlemen of Boston and its vicinity to defray the expenses; the city of Boston has generously granted to the Society for present use, a fine public square of fifty acres; and ten thousand dollars will be offered in premiums, in various departments.

The previous exhibitions of this Society—at Springfield, Mass., in 1853, and at Springfield, Ohio, in 1854—were eminently successful, and no efforts will be spared to make the present show, combining as it does, the four great departments of farming stock, superior to its predecessors.

The premium list, with the rules of the exhibition will be forwarded to all who will address the President, or Secretary, at Boston, to that effect.

It is earnestly hoped that all breeders, and owners of fine stock will feel it to be a duty, as it certainly is for their interest, to contribute to the show.

The list of entries, exhibitors and award of premiums, and all the proceedings of the exhibition, will be published in the journal of the Society, for 1855. Annual members of the Society, who desire to receive the journal, should remember to renew their subscriptions.

MARSHALL P. WILDER, *President*.

WILLIAM S. KING, *Secretary*.
Boston, August, 1855.

The Exhibition of Charles County Agricultural Society will be held this year on the 13th and 14th of November. The list of Premiums is the same as offered at the last Exhibition.

WORK IN THE GARDEN.

SEPTEMBER.

Our advice for this month, will necessarily, be brief.

CABBAGES.

See that your advancing cabbage are kept clear of weeds, and the earth open during this month.

SOWING CABBAGE SEED.

Select a plot on a border with a good exposure, manure it liberally, spade it up to the full depth of the spade, rake it finely, then divide it into suitable compartments, and sow in each $\frac{1}{4}$ of an ounce of seed of each of the following varieties of cabbages, viz:—*Early York, Early Imperial, Early Large York, Early Battersea, Early Sugar Loaf, Large Sugar Loaf, and Early Smyrna*. These varieties will furnish a supply of cabbages from early summer till fall next year, if you take our advice and plant the plants out when, and in the manner, we shall point out when the proper time arrives. In doing so you will have the pleasing gratification next year, of having your table fully supplied with this excellent vegetable during the season, when by neglecting the opportunity now afforded you, of taking time by the fore-lock, you may experience the mortification of seeing your family without them, while your neighbors who are more provident than yourself, and their families are enjoying them. The compartments in which the several kinds of seed sown should be marked, in order that you may distinguish the one from the other.

Time of Sowing the Seed.—The best time to sow cabbage seed at this season of the year, is between the 1st and 10th of the month.

Preparation of the Seed.—Soak the seed 6 hours in fish oil, then drain the oil off the seed, then mix with them a sufficient quantity of ashes to dry and separate them, and make them easy to sow.

Sowing the Seed.—Mix four times in bulk of ashes, or sand with each parcel of seed, and distribute them evenly and thinly over the part of the land allotted to them; when sown, rake them lightly in, and compress the earth with the back of the spade or shovel.

If the weather should be dry, when you sow the seed, give the plot a gentle watering, holding the nose of the watering pot near the ground, so as not to wash the covering of earth from off the seed. Should the drought continue after the seed is sown, you should continue watering daily, or every second day at farthest, until the plants come up, and indeed till rain occurs.

Treatment of the Plants.—When the plants first come up, dust them with a mixture composed of 7 parts soot, and 1 part flour of sulphur.

To promote the vigorous growth of the plants, as well as to protect them from the fly and lice, which are apt to be troublesome at this season of the year, you should prepare and treat the plants to a few waterings of a solution made thus:—

Place half a bushel of horse-dung in a tight barrel. On the dung place a small bag containing 1 quart of soot and 2 oz. of flour of sulphur; fill the barrel up with water. After 24 hours this solution will be fit for use. The barrel will bear being filled up three times.

One pound of guano will answer in the place of the horse-dung. If guano should be used, it, the soot and flour of sulphur can all be put into the same bag.

In about 6 weeks from the time the seed is sown the plants will be fit to set out. When that time shall have arrived, we will tell you how to transplant them to stand the winter.

SOWING CAULIFLOWER SEED.

Between the 1st and 10th of this month sow cauliflower seed: in 4 or 5 weeks the plants will be fit to be removed to the frames, where they should be planted out from 4 to 5 inches apart.

WORKING CAULIFLOWERS AND BROCCOLI.

See to it that your Cauliflowers and Broccoli are kept clean of weeds, the earth well stirred between them. In times of drought have them repeatedly watered—liberally watered—say every afternoon, as these plants cannot prosper without moisture.

SOWING SIBERIAN KALE SEED.

Now if you wish to provide your family next spring with a plentiful supply of luscious sprouts, prepare a bed and sow it with Siberian Kale seed. After the seed is once in, no further labor is necessary.

Selection of the Bed.—Select a dry, loamy, sandy bed, with a Southern exposure.

Preparation of the Bed.—Spread over it a heavy dressing of *Stable-dung*, or its equivalent of *guano*, dig the manure in spade deep, rake the bed well. Then put on a free dressing of a compost made of 6 parts well rotted horse-dung, or its equivalent of *guano*, and 2 parts ashes, rake it in well, then sow your Kale seed about as thick as turnip seed is sown, rake the seed lightly in, pat the earth with the back of a shovel, or roll with a light garden roller. This done, strew over the bed a mixture of 6 parts ashes, 1 part plaster, and 1 part salt, when your work will be done.

Time of Sowing the Seed.—Between the 1st and 10th of this month sow the seed.

SPINACH.

Thin out and work such of your spinach plants as may need to be so treated.

SOWING SPINACH SEED.

Prepare a bed or border, dry, and well exposed, and drill in a few rows of Prickly Spinach seed. These will furnish a crop for winter and spring use. Sow the seed the first week of this month: it should not be longer delayed.

LETTUCE.

Set out any lettuce plants that you may have for heading. In the last week in this month sow lettuce seed.

RADISHES.

From the 1st to the 10th of this month, prepare a light, sandy bed, and sow seed of the black and white Spanish turnip rooted radishes.

ENDIVES.

During the first week in this month set out your endive plants.

CELERY.

Earth up your Celery for bleaching.

CARDUONS.

These should be earthed up for bleaching.

TURNIPS.

Thin out and weed your turnips, if not done already, so as to stand 3 inches asunder, and give them a dusting of a mixture of 6 parts ashes and 2 parts plaster.

GATHERING SEEDS.

As your seeds ripen, gather and spread them out on cloths to dry; but recollect that they should not be left out in the dews of night.

WEEDS.

Have all these pulled up and burnt.

HERBS.

All perennial pot and medicinal herbs may be planted out in moist weather. After planting them out should the weather prove dry, they must be watered until they take root, and until a rain occurs.

THE WHEAT CROP.

To the Editors of the American Farmer.

Messrs. EDITORS:

There are persevering efforts made at this time, and have been every year for some years past, to show that the crops never were so abundant, both from the facts of greater breadths of land having been sown, and greater and increased yield per acre. These assertions so often repeated, have nearly as often been untrue, in particular, in the Western States, even to Western New York, and indeed all New England.

The improvement by improved culture, and high manuring by the increased use of *guano*, clover, plaister, lime and other fertilisers, extends only to a portion of New York, to New Jersey, a portion of Pennsylvania, then through the six Southern States of Delaware, Maryland, Virginia, North and South Carolina and Georgia. The greatest improvement in the growth of wheat in these six States, is to be found in the counties below the Pennsylvania line, and known as the Peninsula formed or bounded by the Chesapeake and Delaware bays, in which are included the State of Delaware, Eastern Shore of Maryland, and Accomac and Northampton counties, Va., a section of country unsurpassed by good lands and spirited farmers, and yet a section of country little known and never noticed by the public statistician, when noting the crops—who invariably jumps over Delaware and the whole Eastern Shore.

But I am off the subject on which I set out. I wish to call your attention to the propriety of furnishing in every issue of your valuable and extensively circulating paper, a table showing the prices of breadstuffs in each of the cities of Baltimore, Philadelphia, New York and Boston for ten years back. The list of prices may be extended to other markets, even into Europe, if found to be convenient and useful.

Yours,

J. JONES.

P. S.—So rapidly has the wheat growing capacity of the West, shown a falling off, both by deterioration of soil, by the many enemies of the wheat crop, &c.: its great liability to *winter-kill*, so as to require oats to be sown, to preserve it in winter—the ravages of the *weevil*, the *fly*, besides free trade and reciprocity, that the emigrants from the thickly settled parts of the best wheat growing sections of the old Atlantic States, are turning to the cheap and much neglected lands of Virginia. The writer saw a gentleman yesterday, Mr. Charles Warner, of New Castle, Delaware, (who has been long famous for large crops of wheat—forty bushels per acre, being often raised by him,) who has lately purchased some 3,300 acres on the Potomac, and designs moving next fall with his twelve living children, five of whom are sons, and several with families of their own.

J. J.

An Agricultural Society has been formed at Prince William county, Va., and C. H. Burton, Esq., has been elected President.

AMERICAN FARMER.

Baltimore, September 1, 1855.

TERMS OF THE AMERICAN FARMER.

Per Annum, \$1 in advance—6 copies for \$5—13 copies for \$10—30 copies for \$20.

ADVERTISEMENTS.—For 1 square of 8 lines, for each insertion, \$1—1 square per annum, \$10—larger advertisements in proportion—for a page, \$100 per annum; a single insertion, \$15, and \$19 50 for each subsequent insertion, not exceeding five.

Address,
S. SANDS & WORTHINGTON,

Publishers of the "American Farmer,"
At the State Agricultural Society's Rooms, 128 Baltimore-st.
Over the "American Office," 5th door from North-st.

A COUNTRY STOCK AND PRODUCE MARKET.

The proceedings published on another page of a meeting of our friends in Anne Arundel county, are worthy of special note for several reasons. It was our good fortune to be present on the occasion, and we have never attended a meeting of the sort more characterized by public spirit, attention to the business in hand, and earnest interest in general questions affecting the Farmer's calling.

The object of these Farmers was to establish on the line of the Annapolis and Elk Ridge Railroad, within two hours travel of the Baltimore, Washington and Annapolis markets, a weekly market which would invite the attendance of persons from each of the great markets—thus offering facilities to those engaged in collecting marketing of all sorts, and at the same time giving the producer the advantage of competition in the sale of his lambs, calves, beeves, wool, eggs, poultry, fruits of all sorts, vegetables, &c. For the sale of all such articles the Farmer has labored under grievous disadvantages. A vast deal in the way of fruits and poultry, and other small matters are yearly wasted in the country for want of a market. His beeves and lambs, and veals and wool, must be sold to an occasional butcher or agent, and he must take either his price or have the animal on hand another month or two, and to be sold finally perhaps for no more, and frequently on an indefinite credit. The proposed market will effectually remedy these evils. Every article, great or small, of farm produce, can find sale at cash prices, under the influence of a fair competition, and if he so choose, under the eye of the Farmer himself. Not only will the Farmers of the section be benefited generally, but the facilities thus afforded will induce those in the immediate neighborhood to engage much more largely in the culture of fruits and vegetables, and by the cultivation of more valuable products, enhance the value of their lands.

We speak thus particularly of a mere local association, because we are quite satisfied that it will commend itself to many other sections where the facilities for transportation may exist, and because we do not doubt that the advantages of such

an association will come home at once with their full practical bearing upon every farmer, great or small.

There is another view of much importance. Such an association where it can exist, may have all the advantages of ordinary Agricultural Societies—by bringing the farmers into frequent association, and stimulating them to more earnest interest in matters affecting their calling generally.

We repeat what we have said before, the desideratum for farmers, is association. They want inducements to bring them more frequently together that they may confer and talk over and discuss either publicly or privately questions affecting their interests. The more they are brought together the more they will see the occasion and necessity of concert and combination to protect themselves against abuses which oppress them, and feel their power to resist and correct them. These market days will offer inducement for such gatherings, and will lead, we have no doubt, to more close association for other purposes. The nature of their occupation subjects farmers everywhere to the evils consequent upon want of concert and unity of action, all occasions tending to bring them in closer union will beget and embody a more enlightened public sentiment and give it force and efficacy.

GRASSES.

The remarks of our esteemed correspondent *Potuxent Planter*, on the subject of grasses, are interesting and instructive. Whether the Red Clover is in the way of failing from among our grasses, as his reasoning goes to show, or for any reason is becoming more uncertain in its growth, it is of great importance to bring in such new grasses as will ensure the stocking of grazing and mowing lands. Well stocked grass lands are the very foundation of successful and profitable agriculture. Neither beeves, milch cows, sheep, hogs, horses or grain crops can be profitably grown, without abundant grass crops, and these depend upon the knowledge of varieties adapted to our climate and soil, and which have in themselves intrinsic value.

Our correspondent is strong on the "Rescue," and another correspondent it will be seen, is equally inclined to "Rescue" Mr. Iverson from the reproach of the failure which others have met with. We have other letters on hand equally strong, which we withhold. The only testimony on the other side yet received is from a correspondent in Tennessee, who says—"I was in the Rescue Grass speculation, and concur with "Doddridge," so far as it is concerned;" and one in Virginia to the same purpose. We have quite enough testimony to satisfy us that the Iverson grass is at least not a humbug. Whether it is to succeed generally to the extent that it has in some cases, is another matter, and must be determined by experiment.

There is no need of any further "speculation." There are quite enough who do believe in it, who will go on and give it a fair trial; let others hold off and await the result.

Patuxent Planter speaks of Rye grass, and asks information with regard to it. Perhaps the best we can give him is the opinion of Mr. Colman, in his *European Agriculture*, where he says, after speaking of clover: "The next grass most cultivated here is the Rye grass. Of this there are two prominent kinds, the Common (*Lolium perenne*) and the Italian (*Lolium Italicum*.) Of the former kind there are several varieties, distinguished mainly by the length of their endurance in the soil, some lasting only for a year, others three or four years, and some producing much more herbage than others. The common Rye Grass has, in my opinion, no advantage over our timothy, either in its productiveness or quality of hay. Of the Italian Rye Grass, I have already spoken much at large. It is in high repute, and is invaluable for the alternate husbandry. "Its limited duration also," says Mr. Lawson, "fits it well for sowing in mixture with other sorts, intended for permanent pasture, as it dies out, and gives place to the weak, and slow-maturing perennial sorts, which are destined ultimately to fill the ground."

"The experiments of Mr. Dickinson, would seem to show that he has fallen upon a most valuable variety; and its superiority, to my mind, was decidedly indicated by a comparison of several specimens growing side by side with it in his grounds." The experiments of Mr. Dickinson alluded to, the opinion of Lawson and others, gave decided preference to the Italian over the common perennial Rye Grass. The experiments show immense results when every cutting was immediately succeeded by rich liquid manures.

On the contrary, Mr. John W. Gibbons, of Philadelphia, in the *Farm Journal* for July says: "When a resident in England, I several times saw Italian Rye grass growing, and once from necessity grew it myself, but can say little if any thing in its favor. It is of a very coarse quality, and in my opinion only usable in its green state, when not more than quarter grown."

"I have not the least hesitation in saying that the Italian Rye grass is nearly, if not quite, as great an exhauster of soil as Timothy, besides it leaves a root which it is scarcely possible to get clear of again. I would rather have good oat or barley straw than the best secured Italian Rye grass." Here is as decided a difference of opinion after years of trial of the much lauded Italian Rye grass, as we have now as to the Rescue. The last named writer thinks well of the Perennial Rye grass, tho' others give the Italian the preference.

APPLES.—Some of the finest apples we ever laid eyes on were sent us by Samuel Bevan, Esq., raised on his little farm near this city. They were of the Gloria Mundi variety, two of them weighed 1½ lbs. each, and measured 13 inches in circumference.

THE WHEAT CROP AND PRICES.

In our August No., on the subject of the wheat crop, we stated on what we considered good authority, that Mr. Peabody had assured his correspondents in this country that there would be a foreign demand for all our surplus breadstuffs—and in the same connection, gave a statement from the Baltimore Sun, obtained from New York papers, of export movements already begun, and others in anticipation to a large extent. A writer in the National Intelligencer, who styles himself "One of the People," affects to be much aggrieved at the statement. He does not believe, he says, that Mr. Peabody has made any such statement—"He had no data on which to form an opinion"—which means that it is impossible that Mr. P. could have data on which to form an opinion of which "One of the People," was not informed. "And he is not the man to express an opinion without data." This is our own estimate of Mr. P., and for that reason being informed of his opinion, we inferred the "data," thinking it just possible that a highly intelligent merchant, deeply interested in the matter, and living in the very centre of correct information, might be somewhat in advance of us in gathering material for an opinion as to the probable demand for breadstuffs on the other side of the water.

"But after all," says the writer, "it is but the opinion of one man." Singularly enough, we only gave it as the opinion of one man, that one man being one George Peabody. But that the opinion of any one man in the month of July, as to the probable demand for breadstuffs through the year, is "liable to be realized or not, just as the mutations of trade, or the exigencies of commerce may direct," is a proposition so original and profound, that not being found in the "Books" nor likely to be brought out by ordinary sagacity, we think our readers will pardon us, that we have not before presented it to them.

The apparently earnest denunciation of the "tricks of speculators" does not move us at all except to laughter. It is itself too shallow a trick to impose for a moment upon the intelligent readers of the Intelligencer. When the crops are almost exclusively in the hands of the farmer, it is not the part of the speculator to push up the prices, and therefore we expect from him overflowing sympathy with the consumer, virtuous indignation against high prices, and a very flippant use of precisely such select phrases as this writer uses—"the luxuriance of vegetation on the soils of the oldest and most barren States"—"One of the most luxuriant harvests that ever a bounteous Providence spread upon the earth"—"the absence of every thing fair, reasonable or honest to sustain high prices." We won't apply to "One of the People" the fable of the wolf in sheep's clothing, but we think that fable might be well amended, by dropping the wolf and inserting a—"bear."

As to the wheat crop of this season, we wish to state as briefly as possible our opinion. We have read all the statements made in the newspapers, all the extravagant accounts of letter writers, all the calculations and estimates which we have been able to get hold of, and without finding it necessary to denounce the authors at all, but preferring to account for their errors on philosophical principles, we think these statements, estimates and calculations are worth just as much as they were on the 30th of last September, when under their influence wheat sold in Baltimore, at \$1.40 to \$1.55, from which prices it rose gradually month after month to \$2.55 and \$2.70. We trust our cotemporaries therefore will not think us disrespectful if we treat all their efforts in this behalf as nothing more than "a way they have" of filling up their columns with entertaining and agreeable matter—matter which might be instructive, had not farmers learned last year, the only lesson it can teach.

While we treat all such testimony, however, as "signifying nothing," we are not prepared to say that the crop is not, on the whole, a good one; because we have no *positive* information as to it. The tenor of our own correspondence is indicated by the following extracts, which show the opinion of men entirely competent to form an opinion, and from various points of observation.

"NOTTAWAY Co., Va. July 20.

"The wheat crop turned out much better than could have been expected at the time it headed—much of the late wheat has been seriously injured by rainy weather, it having rained the last seven days of harvest."

"CHESTERFIELD Co., Va., July 10.

"We have any quantity of rain lately, and consequently crops much damaged on low lands, and wheat injured in the shock."

"RICHMOND Co., Va., July 6.

"I have finished my harvest, which is light. I had 80 acres in wheat, on good land, and I will not make more than 700 bushels, and my wheat, I thought on the whole, a fair average of the neighborhood. I think our crop is $\frac{1}{2}$, I have heard practical men estimate them $\frac{1}{2}$ short, but I hope for better things."

"GOOCHLAND Co., Va., July 30.

"Our wheat crops hereabouts are generally short, especially those seeded late, and to which little or no Guano is applied. From the best information I can obtain, the crop of Virginia must be short of an average one. In the Joint-worm districts, very little was seeded, and the drought of spring cut short the crop very much in the tide-water region."

"SUSQUEHANNA Co., Pa., July 30.

"The wheat crop is very poor here, in northern Pennsylvania. We have had almost continued rain here for the last month—what wheat is cut is sprouting in the shock and swath. I have been informed by many intelligent farmers that they do not believe they will save enough wheat to make their own bread in Northern Pennsylvania."

"ST. MARY'S Co., Md., August 6.

"Our corn crops are very promising; oats a good

crop—wheat too thin on the land from drought last fall, consequently too late for a hard winter and dry spring—fine season set in 1st June, and made a good crop for the straw on the ground—but not an average crop, or better than last year."

Extract from proceedings of a meeting of the Agricultural Society of Talbot county.

Resolved, That the wheat crop of Talbot county, just harvested, although uninjured by fly or rust, the quality of the grain being good, and the yield promising to be good to the very small quantity of straw gathered, is at least one-third less than the average of the last ten years.

Such statements as these, with the universally admitted fact, of a most unfavorable seeding season, consequent late seeding—imperfect germination, and indifferent fall growth—a most severe winter, and as a consequence, an unusual quantity of winter-killed wheat, and a spring most unfavorable to the bringing forward of the crop until after the head was formed—fly in some districts, and chinch bug in others, a great deal of rain immediately after harvest South of lat. 40, and long continued wet spells during and succeeding the harvest, North of that line, are considerations which weigh with us against the admission of a very large crop. On the other hand we admit, that all the grain which thin straw and short heads could grow, was fully and perfectly developed.

Now as to estimates of the crop, the largest is that of the New York Courier & Inquirer, being 175,000,000 of bushels, or 75 per cent. more than the crop of 1850. It will give our readers of Maryland and Virginia some idea of the extravagance of this estimate when we say that it increases the crop of Maryland from 4,494,680 to 6,000,000; that of Virginia from 11,000,000 to 15,000,000; that of South Carolina 300 per cent.; that of North Carolina 100 per cent.; that of Georgia 400 per cent.; Tennessee 600 per cent., and others in larger ratios. The estimate of the Cincinnati Price Current is 114,000,000 for the whole crop, or 14 per cent. increase on the crop of 1850.

While we think the estimate of the Courier & Inquirer a very extravagant one, (the Herald makes it 168,000,000,) let us admit the very liberal estimate of 160,000,000, and how does it bear upon prices. The English estimate of consumption is a quarter or eight bushels to each inhabitant. The Richmond Examiner, in a very able article on the subject of the crops, states it as a fact ascertained by two censuses, that it is not less in this country than five bushels per head. This would require, supposing 25,000,000 inhabitants, 125,000,000 bushels for bread—to which add ten per cent. of the crop for seed, would make 141,000,000, and to this add 10,000,000 for the purposes of Factories, paste, starch, horse feed, &c., gives a total home consumption of 151,000,000 bushels, leaving 9,000,000 for export. In 1847 England imported 35,000,000 bushels. France has imported as much as 20,000,000 bushels in a single year—besides these are the

Italian States and other grain importing States, bordering on the Mediterranean. The imports into England are said to have averaged for the twelve years previous to 1854, and exclusive of '46 and '47, 25,000,000—increasing progressively from 8,000,000 in 1840 to more than 49,000,000 in 1853. These large imports into England and France are, it is well known, mainly supplied from Dantzic and Russian ports, estimated to have reached before the war, the amount of 50,000,000* of bushels. Where is this amount to come from now? Will our little surplus of 9,000,000, after supplying our South American and West Indian neighbors do it? Double it, treble it, and how much will it fall short? Our readers will say that this, too, like other newspaper estimates, is a matter of calculation. We give it for what it is worth. It will serve at least to show that farmers as far as at present advised have no occasion to be alarmed as to low prices.

*We are indebted for these figures, to the *Richmond Examiner*, and give them on its authority from its article on the subject of crops, of 5th August.

PROCEEDINGS MD. STATE AGR. SOCIETY.

The Executive Committee of the Maryland State Agricultural Society convened on Wednesday, 1st day of August, at the Society's Rooms, and was called to order by James T. Earle, Esq., the President.

It was moved and seconded, that the day of the Annual meeting of the Society be changed from Monday 29th to Monday 22d day of October, which motion was adopted; but a reconsideration being moved by one gentleman and seconded by two others who voted in the affirmative, the motion was laid upon the table.

It was moved and seconded, that the thanks of the Executive Committee be offered to the Boards of Agriculture of Connecticut, Michigan, Ohio, Rhode Island, New York and Virginia, for copies of their Reports and Transactions; determined in the affirmative.

It was moved and seconded, that a committee of three be appointed to make arrangements or contracts for the delivery of hay, grain and straw, for the use of the Society at its annual exhibition, and for its proportional distribution to stock—the motion was adopted. Messrs. Glenn, Goldsborough and Worthington, committee.

Moved and seconded, that the President and Marshal be authorized to rent the booths, and make such preparation of the Show Ground as may be necessary for the Annual Exhibition—adopted.

Moved and seconded, that all calves, lambs, &c. sired in Europe, but dropped in this country, be classed as imported stock, and entitled to compete for premiums as such—determined in the negative.

It was then moved and seconded, that all such stock be classed as native—determined in the affirmative.

It was moved and seconded, that a committee of three be appointed to confer with Lieut. Maury, U. S. N., as to the suggestion with reference to a plan of meteorological observation on land, and as to the best method of carrying out his views—determined in the affirmative. On motion, Mr. Earle, President, Hon. Charles B. Calvert, and Dr. Higgins, committee.

The Committee on the amendment of the Constitution submitted two reports, which were severally read and considered, and the following agreed upon to be recommended to the Society at their Annual meeting.*

The Committee appointed to examine the Treasurer's and Secretary's accounts, reported that they had received statements from those officers, but asked further time to make their reports, which was granted.

Dr. Higgins, in the absence of the Chairman, Dr. Stewart, reported that the Committee on Essays upon the most practical mode of soil analysis, had awarded the Society's premium of one hundred dollars to Dr. Charles Bickell, for his "Essay on the analysis of soils, with a formula for the same, as founded on the relations between soils and plants." The report was unanimously adopted.

A memorial was received from citizens of Baltimore County, in the vicinity of the Cattle Show Grounds, complaining of disorder, &c. on the part of the occupants of the Grounds. The memorial was considered, and the Marshal instructed to meet the wishes of the memorialists by closing the Grounds forthwith upon such terms as he may be able to make with the parties.

On motion, the thanks of the Committee were tendered to Mr. Mason, Commissioner of Patents, for his polite attention in forwarding seeds to the Society.

On motion, Messrs. Glenn and Goldsborough were appointed a committee to regulate the admission of attendants upon stock at the Cattle Show, and to take action for the prevention of frauds in the sale of tickets.

It was moved and seconded that the chairman of the several committees on the trial of speed, viz: Messrs. J. Hanson Thomas, John H. Sothoron, Robert Gilmore and Robert Dennison, be a committee to make suitable regulations for trials of speed against time or otherwise at their discretion, it being understood, however, that these trials are not to include racing, and that the Secretary notify them of the same—determined in the affirmative.

It was moved and seconded, that when the Board adjourns, it shall adjourn to meet again on the Thursday preceding the last week in October, for the purpose of completing arrangements for the Cattle Show—decided in affirmative.

On motion, the Committee adjourned.

Test: N. B. WORTHINGTON,
Acting Secretary.

*The copy of Constitution was not received from the Committee in time for insertion.

PREMIUM LIST.

N. B. In the premium list, as published, an error occurs as to the premium on mules. The premiums offered being intended for teams of two and four, instead of five and six as published.

The diagram of the Grounds will be open for inspection, at the Rooms of the Society, from the 1st of October to 15th of October, instead of September, as published in the printed regulations.

GUANO.—As our friends will be requiring their Guano during the present month, for their wheat crop, and will be making inquiry as to prices &c., we would announce to them, that from the best information we can obtain there is no reason to anticipate any change in the terms and prices of the Messrs. Barreda & Bro. Agents of the Peruvian Government in this city, from those which have prevailed since 1st July.

If such should prove to be the case, (and of which we now have no doubt,) our prices for the current month will continue as follows:

\$52 00 per ton of 2240 lbs. delivered any where in the city.

\$51 25 per ton, delivered on board vessel at Guano Wharf.

\$51 00 when delivered at Guano Wharf, free of any expense to us. Terms, Cash, in Baltimore Funds.

NEWLY INVENTED STEAM PLOW, BY A BALTIMOREAN.

We have been aware, for some time, that Mr. Hussey, of this City, the Inventor of the Reaping and Mowing Machine, was engaged in constructing a Steam Plow, with the design to exhibit it in the French Exhibition, in Paris. We learn that he has so far completed his invention as to get up Steam on two different occasions, and Steam along the streets, several squares in the neighborhood of his manufactory. The stone pavements did not, however, afford a good opportunity to test its ability to plough, but we understand that its manageable qualities were pretty clearly manifested. If we can credit our informant, the machine, by its own power, started from the manufactory, down a narrow passage, through the gateway, and along the streets, turning several corners, and into the yard of another Manufactory, on to the scales, where it was weighed; weighing, with water and fuel on board, about six tons. It then backed itself off the scales, and returned to where it started from, steamed through the gate-way, up the narrow passage and backed itself at right angles into a shed, where it would have been difficult to have placed a two-horse wagon by the use of the horses.

The nature of the undertaking and the importance of having his invention in such an improved condition as not to hazard the credit of American Exhibitors, in Paris, has subjected Mr. Hussey to unavoidable delays, yet he has not, until very recently, abandoned the prospect of getting his plow into the Exposition before its close; but it seems, the late edict of the Emperor, withdrawing the favour granted to American Exhibitors, of entering their articles at any time, has closed up Mr. Hussey's way in that quarter. This should not be so great a disappointment to him, considering the Maryland Agricultural Society's Annual Show is now so near at hand, where we hope to see him turn as good a furrow as he could turn in France.

COLOMBIAN GUANO.—We publish on another page an article from Dr. Piggott, on the value of this Guano. We have heard of several cases where it has been used during the past season with the most marked effect, comparing very favorably with the best Guanos.

Q.—A number of matters requiring attention, have been crowded out with several advertisements, by the extent of the interesting article on Wheat, which we publish in this number.

THE HORN WORM ON TOBACCO.

Messrs. Editors:—As the period for the horn worm is now approaching, I would fain beg leave to make a few suggestions to the planters of an easy and novel mode to destroy the fly that produces the worm.

It is this: let each planter give his sons or servants a gun and ammunition to shoot them with mustard seed shot; or indeed the bona fide mustard seed, or salt, or coarse sand would be sufficient to destroy them, with a thimble full of powder. Let some shoot and some kill with a paddle, and let the hands be paid so much a dozen, say six or eight cents for each dozen that they kill, by so doing we should soon be entirely rid of them. I would beg leave to make a suggestion to the ladies also upon this subject, particularly to the single ladies, and that they may "make themselves useful, as well as ornamental," by destroying either in person, or by their house servants, all the flies that prey upon their beautiful flowers after sunset. They little know how much trouble they might save their husbands and lovers, by rendering them such assistance. By the by, what has become of Mr. Arieta's premium for an essay on the culture of tobacco? Did any one contend for the second offer? or did either of the first three get it? or has the monument at Washington taken the prize.*

Yours, &c.,

CORN PLANTER.

*The Monument is entitled to it.—Ed.

Q.—A letter from Orange Co., Va., to the editors of the Farmer, says:

"The crops of wheat in this section of the State, are the best that have been made for the last five or six years, tho' it has received great damage from the many hard and continued rains we have had. There is no question but the farmers will sustain a loss of, at least, a fifth of their crop. Crops of corn are better than I ever saw them, and in consequence of the great scarcity and high prices, a much larger surface than usual was put in cultivation. Very fine crops of oats made, tho' materially injured by the wet weather.

There will be a large crop of wheat seeded this fall, the most of which will be heavily guanoed, in consequence of heavy dressings of guano paying this year, so much better than light. Whilst 200 lbs. of guano generally made about 15 bushels per acre, 300 to 350 made from 25 to 30 bushels."

BALTIMORE MARKETS.—Aug. 29.

There has been some fluctuation in the Grain and Flour market during the past month, partly caused by European advices, but principally by the demand and supply. The accounts of the prospects of the grain crop in England, at the beginning of the month, were rather unfavorable, from the general prevalence of rain, but later accounts were more favorable.

Flour, Howard-st. \$3.25—City Mills, \$3.—Rye Flour, \$7
—Corn Meal \$4.75—Wheat, supply large; fair to prime red 1.60 a 1.70c., good to prime whites, 1.75 a 1.80c., and ordinary to fair lots at prices ranging from 1.35 to 1.60c.—Corn, 85 a 88c. for white, and 88 a 90c. for yellow—Rye, Md. and Va. 87 a 90c.; Pa. 1.00 a 1.05—Oats, 34 a 38c. for Md. and Va.—Whiskey, 41 a 43c., Ohio 42½ a 43—Hay, prime baled \$23 a 25, and loose, \$18 a 20—laster, \$2.87 a \$3 per ton; ground \$1.25 a 1.37 per bbl.—Clover Seed, \$7.50 a 7.75—Timothy do. \$4.35 a 4.75—Flaxseed, \$1.65 a 1.70 per bush.—Wool, onwashed 17 a 19c., pulled, 24 a 25c., tub washed 28 a 30c.; fleece wool, part blood, \$24.37, full blood, 37½ a 42, and extra 42 a 45c.—Tobacco is in fair demand, and at about former prices.

APPLICATION OF GUANO IN DRILLS TO WHEAT.

OAKLAND, near Buckingham C. H., Va., }
August 4th, 1855.

DEAR SIRS:—In your next number of the "Farmer," will you please inform your subscribers whether the germination of wheat will be destroyed, or the tender roots of the wheat, by the application of 150 or 200 lbs. of Guano by the drill, directly in contact with the wheat? I have desired to use one of those drills that apply Guano with the wheat, but fear in a dry season, when the wheat comes up slowly and weak, that the causticity of the Guano would destroy the tender fibres of the seed, and thereby produce a failure in the wheat's coming up. Please let us hear fully on this subject, if you have any experience.

Yours, very respectfully,

M. F. PERKINS.

We have no personal experience in the application of guano by the drill, directly in contact with the wheat; but, from our knowledge of the caustic nature of ammonia, forming an essential portion of guano, do think that the fears of our correspondent are well grounded. We certainly cannot recommend the drilling in of either 150 or 200 lbs. of guano, per acre, by the drilling machine, immediately in contact with the seed wheat. If it did not destroy, to a very large per centum, the vegetative power of the seed, if thus concentrated around it, it would certainly interfere very materially with the grain producing properties of the plants, by giving birth to much straw, and little wheat. But there is another objection. All manuring of land for grain crops should be by the broadcast plan, as then, the improvement in the soil would be general, and not partial, which should be the great object of every one who undertakes to improve his land. Our opinion is, that guano, to produce the best effects, should always be ploughed in to the full depth of the furrow, whether wheat be sown broadcast, or put in with the drilling machine. Either of the quantities named by our correspondent is sufficient to produce a good crop of wheat, the season being favorable. As it is the property of the volatile portions of guano to ascend, and the roots of the wheat plant penetrate the earth from the depth of a few inches to three feet, we can see no propriety in placing such manure in a position to be wasted more or less, as it would be, if placed in drills, on the recurrence of such a season as would produce decomposition; heat and moisture being the condition to bring about this result. Place the guano, then, at the bottom of the furrow say we; the inorganic parts of guano will be safe there, subject to the calls of the wheat plants, while the ammoniacal elements as they assume the form of ammonia, will, by their property of ascending, diffuse themselves throughout the soil, at every desirable depth, to meet the calls of the roots of the plants as they may spread out in search of such food.

BROADCAST SOWING MACHINE.

"A Mr. Brown, of Lawnbridge, Illinois, has invented a machine for sowing seed broadcast. A series of oblique cups are placed upon a rotating cylinder underneath the hopper, in combination with a distributing plate, which convey the seed

from the hopper in such a manner that it is sprinkled with perfect regularity and evenness over the whole ground traversed by the machine."

We copy the above from the American Mining Chronicle, Iron Manufacturers' and Railway Journal, of July 28, and should like to hear more of this machine. The distribution of the seed with perfect regularity, is a most important point gained, one with difficulty attained by the hand, even by the most expert sowers—and unfortunately there are but few such. We should like to know whether it has been put to the test of practical use, and what its success in the field; whether it is so constructed as any given quantities of seed per acre can be distributed, and what these quantities are; how many acres per day can be sown by it: what its weight, and what quantity of motive power it requires to work it efficiently; and what kinds of seeds it is adapted to the sowing of. A good broadcast sowing machine, of general application, worked by horse power, is much needed, and if this machine should prove to be of that character, it cannot fail to come into very general use.

ST. JOHN'S COLLEGE, ANNAPOLIS.

We call the special attention of the Farmers of Maryland and neighboring States to the advertisement of the Trustees of St. John's College, at Annapolis.

It will be seen that they have thoroughly re-organized that venerable institution for the purpose of better adapting it to the ends they have in view, in the discipline and instruction of youth, and in doing so, have not lost sight of the wants of Farmer's sons, in acquiring a practical knowledge of analytical Chemistry, and the several other branches of science immediately bearing on the Farmer's calling. The course of instruction is ample and thorough for a complete College education. The location is eminently healthful, pleasant and easy of access, and offers many inducements to the Farmers of Maryland for the education of their sons. We think they owe it to themselves to meet the patriotic efforts of the Board of Trustees in building up and sustaining a State Institution, while they avail themselves of the advantages the College now offers them.

The corps of Professors is unsurpassed, we presume, by that of any similar institution. The department of Chemistry and Natural Philosophy, it will be seen, is in the charge of Dr. David Stewart, so well known as the Chemist of the Maryland State Agricultural Society.

✍ We call attention to the advertisement of the *United States Magazine*, published by J. M. Emerson & Co., New York, to which we are indebted for the article on wheat with the engravings, which we give in this number. This magazine is an elegant monthly, of 64 pages, profusely and handsomely illustrated, at the extremely low price of \$1 per annum. How it is possible to furnish such a magazine at such a price, can only be accounted for by an immense circulation and payments always in advance. The Prospectus found in our advertising sheet will give our readers a better idea of the character of this journal than our short notice.

GRASSES.

BY PATUKENT PLANTER.

To the Editors of the American Farmer.

It is evident to the most inattentive observer of agricultural operations in the lower counties of Maryland, that the pastures are poorer, and the grasses generally less productive and luxuriant of late than former years. What is the cause? The lands have improved and other products, per acre, have increased, with the advantages of an improved system of cultivation. Is it that they have "tired" of the clovers and other kinds of foreign seeds? Have the lands turned "Know Nothings?" I think not, because the natural or native grasses, such as blue-grass, herd's, white clover and woolly head clover do not now spring up and grow spontaneously with half the vigor and rapidity that they did every where when I was a boy. Before the introduction of English clover and timothy, the clovers both white and yellow were abundant on stiff lands, and the woolly head clover was very rank and luxuriant on sandy soils, affording after the first of June, really rich and abundant pasturage; but it is not so now-a-days. They have been forced to give place to the improved sorts of imported grasses, and they, in their turn, have, it would seem, exhausted the soil of such qualities as serves for their sustenance, so as to flourish and yield a crop remunerative of the outlay in their production. In view of these facts, ought not other grasses be sought after and made to take their places for a few years. What those grasses shall be, time and experiment must determine.

Timothy sown in September with rye, and late in October, even in November with wheat, has lately proved valuable in this region, affording fine pasture after wheat harvest, and the next year a fine crop of hay. This grass should be sown at the rate of two gallons per acre even with clover, over every acre seeded with clover. When sown alone, half a bushel per acre to ensure a good stand. Every farmer could with little trouble save his own timothy seed.

Orchard Grass does well on rich, stiff clays, and should be mixed with clover.

Red Top is indigenous, and succeeds on moist low grounds, and stiff-clay up land.

Italian or Perennial Rye-grass, is well recommended by yourselves, and commands the highest encomiums from numerous English writers. It is said to be capable, if well manured, to yield two crops of seed and one cutting of hay, or for soiling, and then furnishing rich pasture for at least two months in the year. It should be extensively tried.

Iverson Grass. This grass, named after its discoverer, and introducer of its qualities to the American Agriculturists, is destined to immortalize him. As a young though highly intelligent and practical farmer remarked, on seeing its growth, "the ultimatum in grazing, and rearing stock, has at last been found out; meat can now be raised to an unlimited extent with "Iverson Grass" and the "Little Giant"—no matter what amount of stock a farmer keeps, he need have no anxiety about providing if he sows Iverson Grass and owns a Little Giant. I have no doubt as to its vast value. As far as my experience goes, Mr. Iverson did not say too much about it, when he said it was a perennial evergreen, very rapid in its growth, yields abundantly both seed and hay,—affords the best pasture; no wet, or drought, or cold, or heat affects

it detrimentally. I procured last summer one peck, and sowed it the second week in October, on land which had been worked in 1852 in tobacco, in 1853 in wheat, and tobacco in 1854. After the tobacco was cut, the land was ploughed up, harrowed and furrowed with a very small plough, one foot apart, the seed sown, a brush run over the land, and a roller passed over it. This land had no manure applied to it for either crop, and was only a tolerably rich piece of ground. It was a light loam. It was one quarter of an acre in a lot of three acres, two of which were in wheat, and the rest occupied with locust trees growing very thick. On the 1st of December I put on the lot a colt and calf, where they remained until the 17th of April. The grass kept green as the wheat all winter. It was observed by many that the colt and calf preferred the grass to the wheat, which they hardly touched. Two gentlemen, who had laughed at my paying \$5.25 per peck for it, measured it about the 25th of May, and found it 36 inches high, having made that growth in less than 40 days, during which time it had not had rain,—and it was not an inch high when the colt and calf were removed from it. I only saved three bushels of seed, but feel confident I could have saved twenty bushels if I had begun in time, and attended to it,—but I was otherwise occupied, and did not know it was ripe, until a hard rain, and high winds after, had caused it to lose nearly all the seed. As it was sown on a farm distant from the one on which I reside, I did not pay that attention to it, which some of my mistrusting friends did, and who are so delighted with it that they have ordered all the seed I can spare. I fully expect in September to get a large crop of seed, which will be two crops. If it will give two crops of seed, there can be no doubt that 100 bushels of seed can be raised per acre per annum. From the appearance of the seed I cannot come to any other conclusion than that it is as valuable food for stock and poultry as oats.* I view this grass as one of the wonders of the age,—and must revolutionize farming to a great extent, if further trials sustain the past experience in regard to it; especially will it become the greatest of renovators if the culture of the pea be combined with it, as is so strongly recommended by Mr. Iverson. This is the month (September) for sowing grass seeds, and it is earnestly to be hoped that our friends will generally experiment with the various newly introduced grass seeds, and good must come of it. Let us not hold back; let us remember what the introduction of red-clover did for our fathers, and how slow they were in profiting by it, and how they repented not having used it at an earlier period in their system of farming, and while we recollect these facts, let us profit by the remembrance, and go earnestly to work in experimenting this autumn, in the effort to secure some grass that will yield us more herbage and forage; will be more certain to live, and less liable to be destroyed or injured by our variable climate than clover, for it is apparent we can no longer with safety rely upon it for either of these purposes, or for fertilizing the soil. We must either resort to new seeds or change our system of rotation, so as to keep the land for a

*This is a suggestion of my own, never having thought of it until this present writing. If the nutritive qualities of the seed be found to be thus valuable, it will take the place of oats, becoming a perennial oat crop, at the rate of 100 bushels per acre. What a gift it will be, should it so prove!!

few years clear of clover, when it will no doubt again succeed, as has been clearly proven by such a course by one of my neighbors, who is an excellent farmer.

FLORICULTURE—FOR SEPTEMBER.

Prepared for the American Farmer, by John Feast, Florist.

This is the midst of the season for most flowers in bloom, and during this month gardens always have a fine appearance if attended with proper care. What with the greenhouse plants, and such as have been planted out, with annuals, Dahlias, tuberose, &c., we most generally have at this time the greatest show of flowers. If necessary at times, give a little water, to keep them in a blooming condition till the end of the season, which is near at hand; be careful and tie up all plants that the wind will break down, and train up all creepers to rods or trellises. Gather any seeds that may be ripe, and reserve for another year, with its proper name attached, but always save from the best flowers, if you want to keep up a good stock, and if fertilized, new kinds may be expected, as all new kinds are obtained in this way, if not naturally done by the assistance of different insects which the lovers of Flora are much beholden to. Roses for early bloom re-pot in proper sized pots, and if pruned a little, will take better for cutting some of the old wood out; budding may be done, and cuttings put in for a new stock.

Cineraria, Calceolarias and such seeds sown, as soon as the plants are large enough, put in small pots, and carefully water, keeping them in a shady place till sufficiently strong to bear exposure; if too much water is given, they soon damp off; water with a fine rose on the pot, as light as possible. Mignonette seed sow in a frame for early flowering and others that require protection of cold frames.

Carnations and Pinks that have been laid, if rooted, transplant in pots of suitable size, and keep in a shady frame for some time, but do not give too much water till thoroughly established, otherwise they will damp off at the root and be lost.

All greenhouse plants that have been plunged out in the borders may be taken up and repotted; if needed give a good drainage and a plentiful supply of water. If the weather continues fine, the latter part of the month will be soon enough to disturb them.

Have greenhouses all in readiness for putting in plants, such as glazing, painting, and have every thing in clean order, which is essential to plants in keeping them clean when a house is fit for their reception.

WEST RIVER, July 22, 1855.

To the Editors of the American Farmer.

GENTLEMEN:—Having purchased a peck of "Iverson's grass seed" from you last summer, I now give you the result. I sowed it on the last day of August on a piece of meadow land; very soon after it had come up, nearly one fourth of it was destroyed by a very heavy rain. The rest grew finely and was green all winter. I did not graze it, seed being my object. I cut it on the 13th of June, but it was too ripe, and I lost at least one third of the seed on the ground. I hauled the hay to the barn, and it was so very ripe that after turning it over several times the seed all shattered out. I then fanned and measured it, and got eleven and a fourth bushels of clean seed, equal to forty-five bushels for one bushel seeding. I am much pleased with my success, and shall sow five or six bushels for winter pasture.

Yours, very respectfully, T. S. FENWICK.

For the American Farmer.

Herewith I send you a specimen of our blue stem wheat. The grain is smaller, and less plump and transparent than it should be, because I cannot prevail on my tenants to commence their harvests in proper season, i. e. when the heads of grain begin to droop to one side, and an inch or so of ripe straw intervenes between them and the root, thus depriving them of further sustenance from the earth, and exposing them too much, more than they would be in shock to the action of sun and air. We cut up our corn when quite green, and find there is enough nutrition in the stalk to mature the grain, and the same experience applies to wheat, which makes more and better flour, and less bran when cut in the "green order," than if left to become fully ripe, and harden in the field. So with oats, which I prefer to have cut when my old-times neighbors think they will spoil, and to be bound up as wheat is, after the cradle. The grain is larger, straw better, and there is no loss from shattering out, which is considerable when left exposed, as is customary, a day or two in swath. Formerly, when got out by hand, that was necessary to make them thresh easily, but now that we have machines for this purpose, this wasteful procedure should be abandoned. If the sheaves be thrown on the ground, with the tie next to it, it lifts the head from it, gives the grain sufficient air, and, in case of rain, preserves it from all ill effects of moisture.

Our wheat fields ripened very irregularly; owing, perhaps, to the very favorable spring having brought forward seed, that remained inert during winter, and which would probably have perished in a less prosperous season. This continued green while the general crop was fit to cut, and being intermixed with it, occasioned delay in harvesting. It was also much injured by the red weevil, whilst that which ripened in due season escaped. On the whole, we shall have a fine yield.

Yours,

W. B. B.

ELLENDALE, Va.

Since the above came to hand, we have received also a very fine specimen of heads of oats, taken from straw 5½ feet high, which our correspondent says were grown without manure of any sort, on land fifteen years in cultivation. The heads of wheat are remarkably full and well developed.—EDITORS.

LOUISBURG, N. C., August, 1855.

To the Editors of the American Farmer.

Will you be kind enough to give us something more about horses? The horse is the noblest animal in man's employ, and the majority of them are badly managed. In New York, you say, fine horses abound, and are fed wholly on oats. Now, sirs, here in this State, a large work horse eats 30 ears corn and 12 lbs. fodder per day! What think you of such feeding as that? Is not corn necessary for a horse in some manner? either ground up or otherwise prepared? Do you think, or does Mr. Pratt in his lecture, (and by the way I will thank you, if convenient, to send me that lecture,) think that oats entirely will do for a horse?

Any "good points" on horses in your possession will be acceptable. M. L.

We will attend hereafter to further "good points," as suggested by our correspondent. As to feed, 10 ears of corn and good corn-blades is a

work-horse's allowance in Maryland, and is our own experience. It is understood that, come what will we must have *blades* for the work-horses during the hard work of the summer, and the corn to be soaked ten or twelve hours in clean water. This summer, the "Little Giant" has crushed our corn and cob with decided advantage in the feeding. The German farmers of Pennsylvania, we understand, won't use corn for work-horses, when they can get *Rye chop*. Further North, we believe, oats are preferred. In Maryland they are used generally for quick draft and saddle horses.—
Editors.

COLOMBIAN GUANO.

BALTIMORE, July 20th, 1855.

To the Editors of the *American Farmer*.

GENTLEMEN:—The substance known in this market as Colombian guano, has attracted no little attention from the large amount of phosphoric acid it contains, and from the different opinions which have been advanced to account for its formation. Being somewhat extensively engaged in the chemical analysis of the various Mexican guanos, my attention was called to this by receiving a sample for examination, and my curiosity was awakened by its singular appearance, and remarkable composition.

Most of your readers are aware, that when brought to this market, Colombian guano is in lumps, white sand glazed upon the surface, having all the appearance of having been subjected to a temperature sufficiently high to fuse the earthy salts to an enamel. Upon breaking one of these lumps, it is found to be made up of a hard, compact, grayish substance, containing large cavities, which are filled with a soft, crumbling, brownish matter. Such at any rate is the structure of those lumps, which I have been able to examine. When ground, ready for inspection, it is a dirty white powder, containing small pieces of a darker color than the finer dust. It was in this form that I received the sample, the analysis of which I propose to lay before your readers.

One of the principal objects I had in view in making so elaborate an analysis, was the determination of the form in which the phosphate of lime exists in this compound. Strangely enough, the very erroneous opinion was quite commonly entertained, that the phosphoric acid in this hard enamelled rock, is combined with lime in the proportion to form a super-phosphate. To determine this question, I digested the powdered guano in a large quantity of distilled water, and found that the whole amount of soluble matter it contained, was less than 10 per cent. more than 8 per cent. of which consisted of sulphate of lime. The amount of phosphoric acid contained in the watery solution of the guano was very small, merely enough to give a light cloud with the common re-agents. As the sub-phosphates of lime and magnesia are slightly soluble, they ought, when drenched with water, to yield quite as large a precipitate as I obtained. The notion that this substance contains a soluble phosphate of lime is, therefore, totally unfounded.

The following table exhibits the results of a very careful analysis of this guano:

Hygrometric water, - - -	2.15
Organic matter and combined water, -	8.62

Phosphoric acid, - - -	41.62
Magnesia, - - -	3.27
Lime, - - -	33.83
Iron, - - -	A Trace
Chlorine, - - -	.05
Sulphuric acid, - - -	3.65
Sand, - - -	5.34
Carbonic acid, - - -	.53
Loss, - - -	.94

100.00

The most cursory inspection of these results, is sufficient to convince any one at all acquainted with chemistry, that the lime cannot be united with phosphoric acid, to form a super-phosphate. I am inclined to think that both the lime and the magnesia, in this compound, are so combined with the phosphoric acid as to form a tribasic salt, in which one atom of water takes the place of one atom of each of the earths. For this purpose, there would be required 5.2 per cent. of water, leaving of organic matter 3.32 per cent. Similar compounds of the alkaline earths with phosphoric acid, are well known to chemists. We have a phosphate of magnesia, containing one equivalent of acid, two of magnesia, and one of basic water, which crystallizes with fourteen equivalents of water. So also phosphoric acid unites with lime in the same manner, four atoms of water being absorbed by the gelatinous mass.

In stating the combination, however, I have calculated them as containing only the earths and phosphoric acid, as bi-basic salts are constituted and it will be seen that this answers precisely to the results of the separate determination of the different constituents.

Water and organic matter, - - -	10.77
Sulphate of lime, - - -	8.86
Phosphate of magnesia, containing two equivalents of magnesia, - - -	8.96
Phosphate of lime, containing two equivalents of lime, - - -	63.88
Carbonate of lime, - - -	1.20
Chloride of sodium, - - -	.09
Sand, - - -	5.34
Loss, - - -	.90

100.00

The organic matter could not be conveniently separated in sufficient quantity for a careful examination, but, as far as I was able to determine, it seemed to be made up chiefly of humus, and the acids of the crenic group. No trace of uric acid, or other animal matter could be detected.

On microscopical examination, the sand was found to consist of grains of chlorite and quartz, with an amorphous brownish white substance. The former I conceive to be accidental impurities, and the latter to have come from the guano. At some future time, I propose to make a more careful examination of this insoluble residue. For the present I shall content myself with having pointed out the probable method in which the most important ingredients of Colombian guano are combined, and if I shall have removed from the minds of any of my readers, erroneous impressions in regard to the constitution of this substance, and extravagant expectations as to its immediate agricultural value, I shall have obtained my object.

It will be seen that this variety of guano possesses no advantage over the common Mexican guano, except its greater quantity of phosphoric acid.

Its phosphates, for all practical purposes, may be considered insoluble, and must await the slow process of decomposition upon the soil, like all other sub-phosphates.

Very respectfully yours,

A. SNOWDEN PIGGOTT.

THE STRAWBERRY AND ITS CULTURE.

For the American Farmer.

Perhaps no fruit is more delicious to the taste—more healthful, or more decorative to the festive board than the strawberry. And Providence with a munificent hand has distributed it bountifully throughout almost every clime. Its culture is so simple and easy, that superb fruit and abundant crops may be produced, without invoking the aid of the Horticultural Chemist in the preparation of artificial specifics.

For family or market purposes, a few varieties comprise all the merits essential to render their culture remunerative.

The directions herewith submitted, are the result of twenty-five years experience and close observation: during which time more than one hundred and fifty varieties have been under experimental culture, and not more than ten in that number have been considered worthy of propagation. Many varieties have been imported from England and France under high sounding names, and at high prices, and nearly all have been discarded as worthless trash. We must look to native seedlings, as they have proved decidedly more vigorous, productive, and better resist the vicissitudes of our climate.

The strawberry rapidly adapts itself to almost every situation and soil. It prefers and delights in a deep loam, of texture sufficiently pliable for free culture. Although it is a herbaceous plant, its roots if encouraged, will penetrate to the depth of two feet in one season, and hence, the advantage of a deep preparation. Where it is intended to cultivate this plant extensively for market, we would recommend the adoption of the following plan: In the first place, clear off all weeds and grass from the land, then spade or plough, and sub-soil to the depth of one foot or more. Thoroughly pulverize the soil, incorporate with it a few inches of well decomposed stable manure; harrow or rake, and level the surface of the land well.

Mark it off by a line in alternate rows, of three feet and eighteen inches apart. Select strong, young plants; observing to take them up with great care, in order to preserve the roots as entire as possible, and set them in the rows twelve inches asunder, and avoid the fatal error of planting too deep. We prefer the month of March and April for planting. From spring until fall, we permit the runners only to extend and take root in the wide or three feet space, and during this time, we regulate also the plants as they grow to the distance of ten or twelve inches apart; or if they grow too close, they may be thinned to the proper distance in September. Eradicate carefully the weeds and grass as they appear, and occasionally work the surface of the ground between the plants, from spring until autumn. Keep the narrow space of eighteen inches clear, both of grass and plants during the same time, and the following spring you will have your beds all beautifully laid off three feet wide, with an alley of eighteen inches for the gatherers to walk on. The vines cultivated in this way, become extraordinarily vigorous,

and the whole beds sometimes seem to become literally covered with trusses of fruit. The great luxuriance of the foliage, seems to afford protection to the fruit against the intensity of the sun's rays. The preceding mode is not only the most productive, profitable, and economical one that can be adopted upon an extensive scale, but is particularly adapted to the successful cultivation of Hovey's Seedling and other pistillates.

A great many different manures have been recommended. Animal, vegetable and mineral manures have all had their advocates. We believe that stable manure contains all the elements necessary to the production of the largest and highest flavored fruit, and where accessible, we use it in preference to all others. Animal manures we have found too stimulating.

Another plan. For the gratification of the fancy of the amateur cultivators; or to produce magnificent fruit for exhibition, we would recommend the following plan:

Trench your land to the depth of two feet, and mix well with it six inches of well rotted stable manure. And after a thorough pulverization and raking of the soil as heretofore directed, proceed to mark it off in rows 18 inches apart, and set the plants 18 inches asunder in the rows. Destroy all runners, weeds and grass, as they appear throughout the summer and fall. At the approach of winter protect the plants with a covering of long manure or coarse litter, and in the spring remove the whole, and work the ground superficially between the plants; mulch around each plant, or cover the whole surface of the beds at least one inch thick with wheat chaff, chopped straw, pine shatters, short grass or tan. You will thereby preserve the humidity of the soil and keep it cool; greatly increase the size of the fruit, and protect from grit.

And as no teetotaller ever enjoyed pure cold water more than the strawberry, we would recommend copious applications or irrigation with this fluid frequently, from the time of its flowering to the maturity of the fruit. As it is important to protract the season of this fruit as long as possible, and in order to do so, we accelerate the ripening of the earliest varieties. This is accomplished by selecting the first ripeners, and planting them in a gravelly light soil on declivities with a southern aspect, and well protected from the cold winds by close fences or evergreen hedges. This plan frequently produces fruit so early as to command in Washington market one or two dollars per quart. For the medium season and main crop, we prefer level land, rather retentive of moisture. For the late crops, select late varieties, and plant on the north side of the board fences, or north hills, and in cold soils.

The sexual character of the strawberry has been the theme of much controversy. The theory is now generally admitted, and beds are usually made in accordance with it. Many cultivators have recommended the Staminate and Pistillates to be planted in close proximity, or in parallel rows. Others advise them to be planted out in the proportion of one staminate to ten pistillates. We have found these plans to be very objectionable, as the non-fruit bearing plants multiply so rapidly, that in a few years they predominate almost to the entire exclusion of the pistillates. The writer of this article discovered some eight years ago that the objections might be obviated by planting the sexes more remotely. He found that the Boston

Pine and large Early Scarlet, which are hermaphrodites, and under high culture are productive, would fructify Hovey's seedling at the distance of one hundred and fifty feet. The success of the experiment was published at the time in Hovey's Magazine. It has been recommended, and successfully adopted by others since. But how this transfer and distribution of Pollen is accomplished this distance, remains still somewhat inexplicable. Some have attributed the transmission of this minute and subtle dust, to the agency of the honey bee; of this we entertain doubt, as with great vigilance we have rarely seen the bee on the flower of the strawberry. We believe the atmosphere is the medium through which it is conveyed.

Before concluding this article, which has already I fear grown too long, I must add a few remarks in reference to the selection of varieties. As before stated we have had under culture at different times, one hundred and fifty varieties, and in that number have not retained more than ten, and have rejected the rest. We have at this time many new ones under probation, and will not be able to test them until another season.

Large Early Scarlet is of medium size, fine flavor and tolerably productive. Its chief merit is its early precocity.

Princess Alice Maud. Is very large, and early, and immediately succeeds the preceding. From its large size and early maturity, and commanding the highest price in market, we were induced to propagate it extensively until last year. The drought of last season nearly destroyed every plant, and with them our hopes of its becoming a valuable acquisition of the list of market fruit.

Prince's LeBaron. Early, large, productive and of exquisite flavor.

Prince's Imperial Crimson. A very large, dark crimson berry, fine flavor and very productive.

McAvoy's Superior. Very large, beautiful, productive, and finely flavored. It is a valuable family fruit, but is so tender that it breaks easily and its juice exudes, and is unfit for market.

Munroe's Scarlet. Large, rounded or obovate; light scarlet, extraordinarily productive. It came nearer covering the beds with fruit last season than any variety we have ever seen.

Scott's Seedling. Large, conical shape, bright crimson and productive.

Hovey's Seedling. Slightly ovate, conical, beautiful scarlet, fine flavor, very large, very productive. This splendid fruit stands unrivalled for its many merits. It stands at the very top of the list of all strawberries in this country, and is incomparably superior in our estimation to any other variety.

We might add other fine varieties, such as Moyamensing, Pennsylvania, Boston Pine, Barry's Extra, Fay's Jenny Lind, &c. But believe the first eight varieties described to be sufficient for all purposes.

JOHN H. BATNE.

PROCEEDINGS OF A FARMER'S MEETING IN ANNE ARUNDEL COUNTY.

On the 28th of July, a preliminary meeting of a portion of the farmers of A. A. Co., was held at Crownsville, and on Saturday, 11th August, another very spirited gathering for the purpose of maturing their plans for establishing a weekly home market, for the sale of stock and other farm products. The committee to whom the subject was referred at the first meeting, made the following report:

The Committee appointed at the Farmer's meeting, held at Crownsville on the 28th ulto. to whom was referred the subject of a weekly home market, for the sale of stock and other farm products, have had the same under consideration, and respectfully report as follows:

1st. The Committee would propose as the best mode of accomplishing the object of the meeting, the formation of a company, to be called "the Crownsville Market Company;" and that the said company shall issue shares of the par value of \$1.00.

2nd. The Committee being of opinion that \$200.00 (to be increased as the exigencies of the Company, may demand,) will be sufficient to purchase a lot, and the shedding or fencing necessary for present market purposes, or to meet any other expenses necessary to carry out the object of the Company. we recommend that as soon as one hundred shares shall have been taken, the holders thereof shall proceed to elect five directors, who shall generally direct the affairs of said Company.

3d. The Directors shall remain in office for one year, and shall elect a president and treasurer from their own number.

4th. It shall be the duty of the Directors to select a suitable lot, and to purchase, lease, or receive a grant of the same, in the name of the persons appointed Directors, and for the use of "the Crownsville Market Company," and to provide the necessary materials for its improvement.

5th. They shall appoint the market days, and change them from time to time, as may seem advisable, and advertise the same in the neighbouring city papers.

6th. They shall establish such rules for the government of the market, as may be required to facilitate its business, and accommodate the people.

7th. They shall have the power of appointing an agent in each of the cities, of Baltimore, Washington and Annapolis, and fix their commission.

8th. They shall appoint an auctioneer and clerk, whose duty it shall be to receive and sell, either at public or private sale (agreeably to the wish of the owners) such articles as may be sent to him.

The above somewhat amended from the original report, was after free discussion unanimously adopted.

The amount prescribed for the organization of the Company, was subscribed on the spot, and the following gentlemen elected Directors, Dr. Benjamin Watkins, Major L. Giddings, Elie Lusby, Henry F. Turton and Owen Cecil.

Dr. Watkins was appointed President of the Board, and Henry F. Turton, Treasurer and Secretary.

The Company was thus fully organized, and it was understood, would proceed immediately to make the necessary arrangements for carrying out the purposes expressed in the report.

PRINCE GEORGE'S COUNTY AGRICULTURAL SOCIETY.—We learn from the *Advocate* that arrangements will be made for a large Exhibition this fall, by the members of the Agricultural Society, and that Col. Samuel Hambleton, of Talbot county, has been invited to deliver the address and has accepted. The causes which led to the omission of the Exhibition last year, not now existing, the *Advocate* hopes that no effort on the part of the members will be wanting, to secure a first rate one this fall.

WORK FOR THE MONTH.

SEPTEMBER.

During this month every possible exertion must be made to complete the preparation of all lands intended for wheat, in order that its seeding may be effected between the 20th of this month and the 10th of the next, according to the kind of wheat intended to be seeded; the Mediterranean wheat bearing earlier sowing than most other varieties.

PREPARATION OF THE LAND FOR WHEAT.

As to the Ploughing.—The ploughing should be from 6 to 8 inches in depth, according to the character of the land; it should be executed with great accuracy, care being taken to leave no balks; the furrow slices should be laid flat, and, previous to being harrowed, the land should be rolled with a heavy roller.

Of the Harrowing.—This operation should be first performed furrow-wise, and then crosswise the furrows. Previous to being seeded the land should be again rolled, as it is always best to have a smooth surface to seed upon. If time and season admitted of it, it would prove advantageous to give the land harrowings at intervals of some ten days apart with the view of destroying weeds, the seeds of which may have germinated in the meantime, as there are but few grain crops that profit more by the absence of weeds than does the wheat crop. Besides, these repeated harrowings open the soil to the influence of the atmosphere, whereby the inorganic as well as organic substances are encouraged into favorable conditions for the food of the wheat plants when the seed comes to be sown, and as a consequence, earlier germination and more vigorous growth of the plants are the results.

Congeniality of Clover-lays to the culture of Wheat.

—It is an admitted fact among all observing farmers, that clover as a preparatory crop for wheat stands first among all others; first, because it is cheaper than peas, and secondly, because a crop of clover turned under will furnish nearly all the several substances required to grow a crop of wheat on an acre of land, while some are in excess, largely, as the following tables will show. These tables, of course, are only intended to be considered as representing approximate calculations, and to represent also, full crops of wheat, and luxuriant crops of clover:—

Inorganic constituents required to grow an acre of wheat.		Inorganic substances furnished by a crop of clover turned under.	
	lbs.		lbs.
Potash and Soda,	8.3		77.00
Lime,	8.7		70.00
Magnesia,	2.5		18.00
Alumina,	3.1		
Silica,	92.0		15.00
Sulphuric Acid,	1.8		70.00
Phosphoric Acid,	5.6		18.00
Chlorine,	1.0		7.00
Oxide of iron and Alumina,			0.90
	133.0 lbs.		312.90 lbs.

A table showing the organic substances supplied by a full crop of clover buried under, and those required by a full crop of wheat, each crop being the product of an acre of land.

An acre of Clover supplies	of Car.	of Ory.	of Hydro.	of Nit.
	1750 lbs.	1396 lbs.	185 lbs.	78 lbs.
An acre of Wheat requires	1487 lbs.	1262 lbs.	171 lbs.	32 lbs.
	Excess in clover crop	363 lbs.	134 lbs.	14 lbs.
				43 lbs.

We have repeated the preceding tables to demonstrate how essential it is for every wheat-grower to sow clover on his wheat fields.

OF MANURES AND THEIR PREPARATION.

Preparation and application of Guano.—Before we proceed to give our prescriptions of manures, we will state how in our opinion guano should be prepared. In the first place the guano should be sifted through a *riddle*, to separate the *fine* from the lumpy portions of it. The lumps should be spread on a floor, and *gently moistened* with a strong brine made of salt and water, suffered to remain a few hours, when they should be reduced to powder, either with a mallet, or the back of a spade or shovel.

Before sowing the guano, we would add to every 100 lbs. of it, 1 peck of plaster and $\frac{1}{2}$ a bushel of fine salt, the which we would thoroughly mix together. In clayey soils, the plaster and salt may be dispensed with, as the clay will act as a conservator of the ammonia, and its elements, in the guano.

1.—*Soils and manures applicable thereto.* Clover-lays, grass swards, and other lands rich in organic and vegetable remains, we would treat with 150 lbs. of Peruvian guano, prepared in the way we have directed, and to be ploughed in.

2.—*To thin exhausted lands* we would give from 200 to 300 lbs. of Peruvian guano, mixed with 5 two-horse loads of mould, marsh or river mud, per acre, the whole to be intimately mixed with 1 peck of plaster and half a bushel of salt, then broadcasted equally over the ground and ploughed in. This done, we would top-dress with 5 or 10 bushels of ashes per acre.

3.—Twenty-two-horse cart-loads of stable, or barn-yard manure, to be mixed with 1 bushel of plaster, and 2 bushels of salt. To be thoroughly shoveled over, broadcasted, and ploughed in. Give to each acre 10 two-horse loads, and top-dress with ashes, say 5 or 10 bushels to the acre.

4.—Five bushels of bone-dust, dissolved in dilute sulphuric acid and mixed with 10 bushels of ashes, to be *harrowed* in, will produce a good crop of wheat, and place the land in a condition to be seeded to clover.

5.—Five bushels of bone-dust dissolved in dilute sulphuric acid, mixed with 5 bushels of ashes, 2 two horse loads of marsh mud or good rich mould, will manure an acre to be put in wheat, and bear being seeded to clover. It should be harrowed in.

6.—10 loads of marsh or river mud, mixed with 100 lbs. of guano, to be ploughed in, will prepare an acre of land to yield a good crop of wheat, and being seeded to clover.

7.—10 loads of woods-mould, mixed with 100 lbs. of Peruvian guano, will produce an acre of good wheat, the land will bear being seeded to clover. To be ploughed in.

PREPARATION OF THE SEED.

Soaks to prevent Smut.—Of these there are numerous ones, but we shall only mention three of them.

1.—Make a brine of common salt, made sufficiently strong to float an egg. A bushel of wheat at a time is to be put into the brine, the wheat stirred, and all the light or diseased grains, which rise to the top, to be skimmed off. The seed wheat is separated from the pickle, spread upon a floor, when a sufficient quantity of *freshly slaked lime*, must be sifted upon it to coat all the grains. Stir the wheat so as to ensure the coating of lime

After remaining thus a day, the seed will be fit to be seeded. No more grain should be prepared than can be sown in a day. It should be carried to the field in sacks.

2.—*Urine Pickle*.—Throw your wheat into as much *stale* urine as will cover it—stir the wheat, skim off all the light imperfect grains that float. Let the wheat remain ten minutes in the pickle, drain the urine off, spread the seed wheat on a floor, and sift a sufficiency of *freshly* slaked lime over them to coat the seeds. This done, sow the seed as speedily as possible.

Blue Vitriol soak.—This soak is made by dissolving 1 oz. of blue vitriol in a gallon of water, for every bushel of seed wheat. Into this solution the wheat is placed, stirred, and all the light floating grains skimmed off. The grain is to remain half an hour in the soak, when it is to be drained off, and washed with pure water, and dried with *freshly* slaked lime.

SELECTION OF SEED.

Great care should be taken to procure good kinds of seed wheat, and as much, to see that there are no seeds of weeds, or of rye amongst it. By using a suitable sieve, you may get rid of the weed seeds, but not so of the rye.

METHOD OF SEEDING.

Where proper care has been taken in the preparation of the soil—where the soil has been well and faithfully ploughed, rolled, and harrowed, thoroughly, and well, and the soil brought to a fine state of pulverization—there can be no question, but that the drilling in of the wheat is decidedly the best plan—that thus cultivated, it stands a better chance of escaping from injury by winter-killing, and that the product will be heavier, to say nothing of the saving in seed wheat. On the contrary, if the soil has been indifferently ploughed, and as indifferently pulverized, we should think that broadcast seeding should be resorted to.

We wish all to bear this in mind, that the land should be rolled before being sowed or drilled.

TIME OF SEEDING.

This is one of those mooted questions, which in all probability will never be settled; but as a *general* thing, we believe that early seeding succeeds best in an average of years. The Mediterranean, and what is called May wheat, bear earlier sowing than others. Without pretending to prescribe any particular day as the *best*, we would say that all wheat growers should make their arrangements so as to finish their seeding by the 1st of October,—and at all events not to be later than the 10th of that month. The Mediterranean wheat may be put in any time during this month.

DEPTH OF COVERING THE SEED.

No seed wheat should be covered more than 3 inches: if the depth of 2 inches can be arrived at, we should think that decidedly the best, as we believe much more plants would come up at that depth than almost any other.

With the drill, the depth of covering is completely within the control of the operator,—a circumstance of great advantage.

If the ground has been well and neatly ploughed, rolled, harrowed, cross-harrowed and rolled before seeding; by harrowing, cross-harrowing and rolling, a proper depth of covering may be attained.

The seed being harrowed and cross-harrowed in, then water-furrows should be carefully laid off, and these should be rolled cross-wise the furrows.

QUANTITY OF SEED PER ACRE.

When the seeding is by broadcast sowing, it is our opinion that 2 bushels of seed per acre should be sown. If the seed be put in by a *drilling machine*, 5 pecks per acre will be enough.

WATER-FURROWING.

We have already spoken of the formation of water-furrows, under the head of *depth of covering the seed*; but we deem this part of the business so important to success, that we will venture a few more remarks; first premising, that if proper care were observed, in deep and truthful ploughing, thorough pulverization, carefully constructed water furrows, and subsequent care through winter and spring to remove all obstructions from the furrows, that we should hear but few complaints against winter-killing. The furrows should be so formed, and at such distances, as to prevent the lodgement of the water upon any portion of the field, as there is nothing more detrimental to wheat plants, and to their healthful growth, than water lying on them through the seasons of alternate freezing and thawing. Every wheat grower should not only make it a point of duty to form judiciously constructed water-furrows, but he should consider it his duty also, to have these furrows carefully examined every two or three weeks in winter and early spring, and every thing removed from them that could possibly impede the free passage of the water.

CLEANSING GRANARIES.

All granaries should be well cleansed before the grain is stored therein. As to modes of cleaning we will give two receipts. The first is that practiced by the late Hon. Wm. Carmichael, of Queen Ann's Co., Md., who was one of our most enlightened, pains-taking farmers—the latter is our own:

1. Mr. Carmichael says:—

"When my granaries are clear of grain, I place powdered brimstone in an earthen jar, which for safety I put on the floor in a bed of sand, closing doors and windows, and fire it. The smoke either destroys them [the weevil] or drives them off."

2. In the first place, sweep the ceiling and side of your granary, then sweep the floor, take the wall's dust and dirt carefully up and burn it. Do not sweep it out of doors to breed millions of insects, to damage your next year's crop. This done, wash the ceiling, side-walls, and floor with strong ley, and then complete your cleansing, by white-washing the entire interior of your granary, ceiling, walls, and floor.

DESTRUCTION OF RATS.

Before storing away your grain, you should endeavor to destroy the rats, as every full grown rat is able to eat an ounce of wheat, rye, oats or buckwheat per day.

We know of no better plan than this. Treat them to two or three successive messes of fresh fish, *without any poison* being placed on them. They are passionately fond of fresh fish, and will devour them with avidity. Then scale a few dozen fresh fish, sprinkle arsenic over them, place them in their haunts; these the rats will eat, and receive their quietus.

RYE.

This crop may be put in up to the 15th of this month; though it would have been better that it had been seeded last month. If you wish to get a good crop of rye, you must treat the soil as we advised last month.

For its management we refer you to our last month's work.

Quantity of seed per acre.—When sown this late, less than 5 pecks of seed per acre should not be sown.

ORCHARDS.

If, as we fear is the case, your orchard has not been manured for some years, prepare and give it a dressing of compost made as follows:

Mix together, layer and layer about, for each acre
6 loads of wood's-mould, marsh, or river mud,
2 loads of rotten dung,
2 bushels of bone-dust,
5 bushels of ashes,
1 bushel of plaster, and
2 bushels of salt.

The whole to be thoroughly mixed together, thrown into bulk, and permitted to remain so for three weeks; then shovel it over and apply it broadcast over the land; plough it in about 3 inches deep, so as not to injure the roots of the trees, then harrow and roll.

This done, dress the trunks of the trees, and the limbs as far as you can reach with a white-wash brush, with a mixture made in the proportion of

1 gallon of soft soap,
 $\frac{1}{2}$ lb. flour of sulphur, and
1 quart of fine salt.

Stir the mixture as applied.

If the bark on your trees is rough, mossy or dead-like, scrape it off before you apply the mixture. The consequence of this treatment to your orchard, will be renewed vigor to your trees, increased prolificacy, and fairer fruit.

TREATMENT OF GRASS-SWARDS INTENDED FOR CORN NEXT SPRING.

Should you have a field in grass that you wish to put in corn next spring, spread thereon 10 or 12 bushels of lime per acre. The lime should be slaked with salt-brine, and spread as soon as slaked: harrow the lime in.

If your land be *stiff clay*, plough it up late this fall to the depth of 6 or 8 inches, and give it a top-dressing of 2 bushels of *freshly slaked lime*, 2 bushels of *salt*, and 2 bushels of *unleached ashes*, in order to assist the first in the destruction of the germs or grubs and other worms. Next spring, manure, cross plough the manure in, to the depth of 4 inches, dress with 2 bushels of salt per acre, harrow and roll, and your corn will escape destruction by the grub, cut, or wire worm.

TREATMENT OF MEADOWS.

If your meadow has been 3 years set, top-dress it with a mixture of 2 bushels of bone-dust, five bushels of ashes, and 2 bushels of salt per acre; harrow the composition in, and roll.

If your meadow is an old one, and the grass giving out, you may greatly improve its yield, by harrowing it well, sowing thereon the above top-dressing, harrow it in, then sow more grass seed thereon, say half a peck of timothy seed per acre, and complete your work by rolling the seed in.

If you have a meadow which you set last year, that is too thinly set with grass, treat it to the above top-dressing, then sow thereon 1 peck of timothy per acre, and roll the seed in.

These operations should be performed between the first and middle of this month. If well and carefully done, your yield of grass next year will be increased more than a hundred per cent.

MIXTURE FOR STOCK.

Mix equal parts of *mid oyster shell lime* with salt, and finely sifted ashes, and give to each head of your stock, thrice a week, from 1 to 2 oz. according to age.

SALTING SHEEP.

These should be regularly salted thrice a week. If, however, you would place pieces of *rock-salt* in a trough, under cover, accessible to them, your sheep will do their own salting.

SETTING OUT YOUNG ORCHARDS.—PREPARATION OF THE GROUND, &c.

Those who have no orchards on their estates, should prepare the ground at once, and make arrangements to set out a young orchard. They should be sure to buy none but the most superior kinds—such fruits always have brought, and always will bring, good prices. An acre in the best kinds of apples will bring more money than will three acres in wheat or any other grain, or other crop. It is worthy of remark in this connection, that the demand for superior fruit is on the increase, and that an orchard of well selected fruit, always adds to the value of a farm whenever a proprietor wishes to sell, to say nothing of the comfort and luxuries it ensures to himself and family.

In buying trees to set out a young orchard, every farmer and planter should repudiate the idea of purchasing from tree-peddlers, they being men generally upon whom no reliance can be placed. The owners of nurseries of established reputation are the only reliable persons to procure trees from—they are responsible, and should they deceive you, they are answerable at law by an action for damages.

COMPOST FOR AN ORCHARD.

The following is intended for an acre to be set in an orchard:

10 two-horse cart loads of marsh, river, or creek mud, or the same quantity of woods-mould,
5 two-horse cart loads of stable or barn-yard manure,
4 bushels of bone-dust,
1 bushel of plaster, and
10 bushels of ashes.

The whole to be shoveled over, well mixed together, and left in bulk 3 weeks.

Preparation of the ground.—At the expiration of three weeks, shovel over the compost, so as to mix it thoroughly, then haul it on to the ground, spread it evenly over the surface, plough the compost in to the depth of 8 inches, let the *subsoil* plough follow the other plough to the depth of 6 inches more. The ploughing and subsoiling done, harrow, cross-harrow, and roll, when your land will be fit to receive the trees.

SETTING OUT THE TREES.

Dig the holes 40 feet apart each way, 6 feet square, and 2 feet deep; place the surface soil dug out of the holes on one side, and the subsoil on the other; mix the surface soil with an equal portion of the compost—a part of which must be saved for the purpose. With this fill up each hole to the proper depth to receive the tree. Examine the roots carefully, and cut off any parts that may have been broken, smoothly, then insert the tree so as to stand in the hole the same depth it did in the nursery. Let one man hold the tree up straight, while the other spreads the roots carefully and regularly out; next drive down a stake to support and keep the tree erect; then commence to fill up the hole with the mixture of compost and surface soil: as the soil is being put in, say when the hole is about one-half filled, pour in a bucket of water to settle the earth around the roots; then put in the remainder of the soil; press the earth gently with the hand, and finish by giving to the

surface a shallow basin-like form; by confining the tree to the stake with a whip of straw, or some other soft substance; then fill up the basin formed around the tree with mulching of some kind, and gradually pour thereon a bucket of water.

CELLARS.

Have these, if you have not already done so, cleaned out and whitewashed, and strew lime, or plaster over the floor; the latter we believe to be the best.

OUT-HOUSES.

These should be cleaned out and whitewashed.

FENCES.

As your pastures cease to afford your stock good picking, you must see to the examination and repairing of your fences. Make the examination yourself, and see that all repairs needed are forthwith made. If you do not, your neighbors stock, as well as your own, will be looking out for the weak places in your fencing, and as a necessary consequence, your corn fields will be broken into and your crop preyed upon.

DRAINING AND DITCHING.

Permit us to repeat to you our advice to drain any wet lands that you may have. We do not exaggerate when we say that one acre of such land, after having been drained and relieved of its excess of water, will yield more than two acres did before, and that the produce will be of a better quality.

TOPS AND BLADES.

Harvest and secure these in good time.

SETTING TIMOTHY MEADOWS.

If you have no meadow on your farm, do away with the reproach, and set one out early this month—by the first or fifteenth.

EVERGREEN NURSERY,

WOODBURY, N. J.

THE subscriber invites the attention of planters and dealers to his stock of *Evergreen and Shade Trees, &c.* They are of fine thrifty growth, and remarkably well shaped, and supplied with excellent roots; are all *Nursery Seedlings*, and have been repeatedly transplanted, and are in the most favorable condition for moving again. They will be delivered in Philadelphia free of charge, and thence forwarded to any part of the United States by express, or otherwise as directed. The utmost care will be given to the taking them up, so as to preserve the roots, and to the packing, so as to secure their safety in transportation. They consist in part as follows:

Norway Spruce, from 3 to 6 feet—Weymouth Pines, 3 to 6 feet—Scotch Firs, 3 to 6 feet—European Larch, 3 to 7 feet—Silver Firs, 2 to 3 feet—European Balm of Gilead, 2 to 3 feet—Black Austrian Pines, 3 to 4 feet—Corsican Pines, 3 to 5 feet—Dorset Cedars, 3 to 4 feet—Bhoton Pines, (P. excel.) 3 to 5 feet—American Arbor Vitæ, 3 to 5 feet—Silesian Arbor Vitæ, 3 feet, together with English and Irish Yews, Stone and mountain Pines, Tartarian, Chinese and other Arborvitæ, British and Turkey Oaks, Elms, Lindens, Weeping Birch, English Ash, Maples, and a general assortment of the most desirable Ornamental, and Shade Trees.

Also a large quantity of small stock for Nurserymen. The above trees are believed to be well worthy the attention of Nurserymen, Landscape Gardeners, Managers of Cemeteries and Public Grounds, and others who design to plant in large or small quantities. They will be furnished on very reasonable terms, by the single plant, dozen, hundred, or thousand; and a large discount made to those who buy by the quantity, or to sell again.

DAVID C. GRISCOM.

WOODBURY, N. J., 8th mo. 1st, 1855. sept-3t

Work for all, and Work that Pays!
Read Miller, Orton & Mulligan's
ADVERTISEMENT,
"How to Make Money."

aug1

WORMS! WORMS! WORMS! A great many learned treatises have been written, explaining the origin of, and classifying the worms generated in the human system. Scarcely any topic of medical science has elicited more acute observation and profound research; and yet physicians are very much divided in opinion on the subject. It must be admitted, however, that, after all, the mode of expelling them and purifying the body from their presence is of more value than the wisest disquisitions as to their origin.

Such an expelling agent has at last been found. Dr. M'Lane's Vermifuge proves to be the much sought after specific—its efficacy being universally acknowledged by the entire medical faculty. As further proof, read the following from a lady—one of our own citizens:

NEW YORK, October 15, 1852.

This is to certify that I was troubled with worms for more than a year. I was advised to use M'Lane's CELEBRATED VERMIFUGE. I took one bottle, which brought away about fifty worms; I commenced improving at once, and am now perfectly well. The public can learn my name, and further particulars, by applying to Mrs. Hardie, No. 3 Manhattan place, or to E. L. Theall, Druggist, corner of Rutgers and Monroe streets.

P. S. Dr. M'Lane's Celebrated Vermifuge, also Dr. M'Lane's Liver Pills, can now be had at all respectable Drug Stores in this city.

—Purchasers will please be careful to ask for, and take none but Dr. M'Lane's VERMIFUGE. All others, in comparison, are worthless.

ASK ANY ONE WHO HAS EVER USED

DR. M'LANE'S CELEBRATED LIVER PILLS,

—What they think of them? Ninety-nine in a hundred will tell you they are the best Pills for liver complaint, sick-headache and dyspepsia that they have ever used. Read the following from one of our most respectable citizens:

NEW YORK, August 3, 1852.

I do hereby certify that I have been suffering from a pain in my side and breast for a long time, and after trying many remedies came to the conclusion that my liver was affected. I immediately commenced using Dr. M'Lane's Celebrated Liver Pills, and the few that I have taken have already given me more relief than all the other medicines I have taken put together. I went to a clairvoyant to consult him; after examining me carefully, he advised me to continue the use of Dr. M'Lane's Pills, that they would effectually cure me.

W. W. PHILLIPS.

No. 2 Columbia place.

P. S. The above valuable remedy, also Dr. M'Lane's Celebrated Vermifuge, can now be had at all the respectable Drug Stores in this city.

—Purchasers will please be careful to ask for, and take none but Dr. M'Lane's LIVER PILLS. There are other Pills, purporting to be Liver Pills, now before the public.

THE INSTITUTE EXHIBITION.

THE EIGHTH ANNUAL EXHIBITION BY THE MARYLAND INSTITUTE, FOR THE PROMOTION OF THE MECHANIC ARTS, will be opened on TUESDAY, 2d of October. Goods will be received for exhibition and competition at any time prior to September 27th, and for exhibition merely, as late as 1st of October.

The co-operation of the manufacturers, mechanics, artists, and the community generally is respectfully invoked in the immediate preparation of articles for display.

All articles deposited must be of American manufacture; the only exception to this rule being in favor of rare specimens in the department of the Fine Arts, owned by parties not holding them as merchandise on sale.

Circulars, embodying the regulations and arrangements, and blank applications for space, with all other information, may be had at any time of the Secretary of the Institute at the Hall, Committee.—J. VANSANT, THOMAS SWANN, W. ABRAHAM, THOMAS J. CLARK, GEORGE H. RODGERS, C. W. BENTLEY, W. P. SMITH, T. J. LOVE GROVE, THOMAS TRIMBLE.

Superintendent.—JOHN F. MEREDITH,

sept-3

SOUTHDOWN SHEEP.



A 3 YEAR OLD BUCK. The sire of a great many fine lambs the last two seasons.—BUCK LAMBS, got by the Buck of the Jones Webb stock, which took the first prize at the last Exhibition in Baltimore, and probably a few EWES, FOR SALE by the subscriber, who refers to the awards of prize at the successive exhibitions in Baltimore, as sufficient attestation of the superior and established quality of his stock.

M. TILGHMAN GOLDSBOROUGH,
Ellenborough, near Easton, Md.

aug1-3t

CATALOGUE OF PEACH TREES FOR SALE.

THE SUBSCRIBER offers for sale at his Nursery near CECILTON, Cecil Co., Md., 75,000 PEACH TREES, consisting of all the best varieties now in cultivation, to wit:

Tooth's Early Red,
Large Early Yorks,
Large Early Oving,
Honest John's,
Yellow Rare Ripe,
Patterson Seedling,
Red Rare Ripe,
Old Mixon Free,
Old Mixon Cling,
Magnum Bonum,
Rodman's Free,
Ward's Late Red Free,

Late Heath Free,
Reave's Late Yellow,
Late Delaware's,
Red Heath Cling,
Crofer's Late Malagatone,
Amock's Late Yellow,
Temple's Late White,
Late Rare Ripe,
Late Heath Cling,
Fox's Seedling,
Langraces,
Algier Winters.

These Trees are one year old, from the bud, and of large size; the buds were selected from all the principal orchards in the months of August and September, when the trees were bearing, and may be relied on as the kinds specified, and will be ready for transplanting by the 20th of October. Having been engaged in raising the Peach Trees alone, and the cultivation of peaches for a number of years, I now feel confident that I have selected from all parts of the country, the very best kinds and will warrant all trees sold by me to be the kinds sold for, as I have them all in bearing in my orchard. Having spared neither money or pains in selecting the best bearers and the most adapted to the markets, and to exclude all others from my list. I will sell the present year at five cents a piece for the 1,000, and six cents a piece for less than that number. Address the subscriber, at Cecilton, Cecil Co., Md. sep-17*

JOHN HUSELT.

TO FARMERS

AND ALL OTHERS

INTERESTED IN AGRICULTURE,
HORTICULTURE, &C.
WILL BE PUBLISHED, IN OCTOBER, 1855,

THE YEAR BOOK
OF
AGRICULTURE;

OR,

The Annual of Agricultural Progress and Discovery, for 1855.

Exhibiting the most important Discoveries and Improvements in Agricultural Mechanics, Agricultural and Horticultural Botany, Agricultural and Economic Geology, Agricultural Zoology, Meteorology, etc., together with Statistics of American Growth and Production, a List of Recent Agricultural Publications, Agricultural Patents, with Notes by the Editor, on the Progress of American and Foreign Agriculture, for the Year 1855, by DAVID A. WELLS, A. M. Member of the Boston Society of Natural History, formerly Chemist to the Ohio State Board of Agriculture; Editor of the Annual of Scientific Discovery, Familiar Science, &c.

It is evident that a publication of this character, giving a complete and condensed view of the Progress of every Department of Agricultural Science, free from technical and unnecessarily scientific description, and systematically arranged so as to present at one view all recent Agricultural Facts, Discoveries, Theories and Applications, must be a most acceptable volume to every one interested in the Cultivation of the Soil, or the Diffusion of Useful Knowledge.

The "YEAR BOOK OF AGRICULTURE" will be published in a handsome octavo volume, comprising upwards of 300 pages, and will contain an elegant Steel Portrait of a Distinguished Agriculturalist, together with Fine Illustrations of New AGRICULTURAL MACHINES, STOCK, FRUIT, &c., together with a series of BEAUTIFULLY COLORED ENGRAVINGS.

Although the publication of this work will be attended with very heavy expenses; it will be issued at the low price of \$1.50, thereby enabling every FARMER and PLANTER to possess a copy.

On receipt of the published price it will be sent free per mail, to any part of the United States. As the sale will be very large, all orders should be sent in immediately.

A LIBERAL DEDUCTION TO CLERGS.

Address,

CHILDS & PETERSON,

124 Arch St., Philadelphia.

AGENTS wanted to sell the above valuable work.

sep-1-it

ST. JOHN'S COLLEGE
RE-ORGANIZED.

The Visitors and Governors of St. John's college, at Annapolis, have RE-ORGANIZED this Institution with the view of more fully developing its capacity of public usefulness.

It has been considered as due to the public that the advantages which it is believed this College possesses, and the general features of the system about to be put into operation, should be made known.

At the recent election of the Faculty, the following Professors were appointed.

1. Rev. HECTOR HUMPHREYS, D. D., Principal, and Professor of Moral Philosophy and History.

2. DAVID STEWART, M. D., (Chemist of the Maryland State Agricultural Society,) Professor of Chemistry and Natural Philosophy.

3. DAVID CAPRON, A. M., Professor of Mathematics.

4. Rev. RUSSELL TREVETT, D. D., (late Professor of Ancient Languages, St. James' College, Maryland,) Professor of Ancient Languages.

5. RUDOLPH L. TAFEL, A. M., Professor of Modern Languages.

6. WILLIAM H. THOMPSON, Superintendent of Preparatory Department.

These gentlemen are known to be experienced and successful instructors. It is intended that they shall reside upon the College grounds, where additional buildings are now in process of erection for their accommodation. This arrangement will enable them to see to the comfort as well as the advancements of the students.

The spacious and beautiful grounds around the College buildings afford ample opportunity for military and other healthy and manly exercises.

The healthfulness of the place is well known. The experience of a military station in this respect, for nearly half century, induced the General Government to establish here the present flourishing Naval Academy.

There are four places of public worship in the city—Episcopalian, Methodist, Presbyterian and Roman Catholic. Students will be required to attend such one of these churches on the Sabbath day as the parent or guardian may request.

The course of study embraces all the branches of the usual College or BACCALAUREATE COURSE.

A PARTIAL COURSE has also been authorized. This provision is made to enable young men, or their parents or guardians, to select branches of instruction with a special view to their intended pursuits in life. For those who design to follow Engineering, Agriculture, or Mercantile pursuits, instruction in the sciences most useful to these callings is provided.

AGRICULTURAL CHEMISTRY will hold a prominent place in the list of studies. For this purpose the services of an eminent practical Analyst has been secured.

Regular instruction in FRENCH, SPANISH, GERMAN and ITALIAN will be given the students without additional charge.

In addition to the instruction in Engineering and Chemistry, as a part of the regular course, special classes will be formed at stated periods, for the benefit of those whose professional views in life require a thorough education in either of these sciences.

The College is provided with a CHEMICAL and PHILOSOPHICAL APPARATUS sufficiently extensive and complete to illustrate all the branches of Chemistry and Engineering by experiments in the Laboratory and practice in field operations.

A PREPARATORY DEPARTMENT is attached to the College, and subject to all its rules and regulations. An opportunity is thus afforded to young men, not sufficiently advanced, to prepare to enter the College classes. Students who can stand a creditable examination in English Grammar, Geography, Arithmetic, Latin Grammar, and to translate the usual Latin Reader, may be admitted to this department.

It is deemed unnecessary to mention in detail all the branches of instruction, and the text books in the courses, or the rules and regulations for the government of the students. Any one wishing fuller information on this subject will receive it in a printed pamphlet by addressing any one of the Professors. Suffice it to say, that the design of the whole system is to impart to the young men who may be sent to this institution, a sound, practical education, and to inculcate and enforce a high standard of morality and gentlemanly deportment.

The College term will consist of TEN MONTHS, beginning on the FIRST WEDNESDAY of October, and ending on the first Wednesday of August following. The intermediate period will be the vacation. The commencement exercises will be held on the FIRST WEDNESDAY of August.

The College will OPEN on the FIRST WEDNESDAY of the ensuing October, at which time all the students proposing to enter will present themselves and be assigned to their appropriate classes.

The boarding house on the premises will be in readiness for the reception and accommodation of those coming from abroad. The charge for the entire College session, is for

Board.....	\$120.00
For tuition in the Preparatory Department.....	30.00
do. do. Freshman and Sophomore.....	42.00
do. do. Junior and Senior.....	51.00

Students provide their own washing, fuel, lights, and furniture for their private rooms. The steward will furnish these at cost if desired.

College bills are payable in advance three times a year. It is recommended that all funds for the students' expenses be placed in the hands of some member of the Faculty, who will cheerfully disburse them without charge. sep1

TAFU.

THE Lodi Manufacturing Company, of New York city, (for 16 years manufacturers of Poudrette,) respectfully call the attention of Farmers and Planters to an article they are manufacturing from Night Soil, composed of mixture of

Pure Night Soil and No. 1 Peruvian Guano,

In the following proportions: 5 per cent. Calcined Plaster, (used as a drier); 25 per cent. (in weight) of No. 1 Peruvian Guano, and 70 per cent. Night Soil, after it has been disinfected, dried and screened through a $\frac{1}{4}$ inch cross barred screen. This article is called.

TAFU,

and is equal to Guano in the proportion of 400 lbs. Tafu to 300 lbs. Guano, and will be delivered in Baltimore, at the

RATE OF 37 DOLLARS PER TON.

They earnestly request a trial, and hold themselves responsible for this article being as represented.

Agents in Philadelphia—P. MORRIS & Co., E. B. ROGERS.
Wilmington, Del.—GEORGE CHURNSIDE.

A. BELL, No. 40 Second-st., is Agent for Baltimore.

Apply to THE LODI MANUFACTURING Co.,
60 Cortland street, New York.

J. J. & F. TURNER,

No. 42 Pratt Street, Baltimore.

KEEP constantly on hand a full supply of Peruvian, Also "De Burg's No. 1 Ammoniated Super-Phosphate of Lime," and "Trego's Soluble Alkaline Phosphate with Peruvian Guano" all kinds of FIELD SEEDS, of the choicest selections; Seed WHEAT, RYE and OATS, of every variety; GRAIN of every description; all grades of MILL FEED; Lime, Bricks, and Hair; Ground Plaster, for Agricultural purposes, all of which they will sell at lowest rates for cash or on short credit for approved paper.

OFFICE OF INSPECTOR OF GUANO,
No. 11 EXCHANGE BUILDING.

Analysis of following cargoes of Guano, imported since last report:

PERUVIAN GUANO.

		Ammonia.		16.40 per ct. marked A.	
July 2	Ship Shirley,				
" 3	" Sarah A. Boyd,	16.75	"	"	A.
" 25	" Susan E. Howell,	16.35	"	"	A.
" 29	" Realm,	16.19	"	"	A.
" 23	" Lancaster,	16.38	"	"	A.
" 6	" E. Bulkley,	15.39	"	"	A.
Aug. 3	" Arcole,	15.95	"	"	A.
" 6	" Bay State,	16.30	"	"	A.
" 9	" Versailles,	16.10	"	"	A.

All of above cargoes contain Phosphoric Acid equal to from 26 to 30 per cent. of Bone Phosphate of Lime. Each contained more or less damaged, which was separated from the sound Guano and marked D.

MEXICAN GUANO.

		Phos. Acid.		Bone Phos. Lime.		Mark.	
Aug. 1	Brig Roswell,	11.81	pr. ct. equal to	25.59	pr. ct. C.		
" 8	Barque Broosa,	26.17	"	"	"	56.70	A. A.
" 30	Brig Mary,	20.95	"	"	"	45.39	A. A.
July 30	Brig Edwin,	26.31	"	"	"	57.00	A. A.

WM. S. REESE,
State Inspector.

Sept. 1, 1855. It

WHEAT DRILLS.

WE have now in store for sale, PENNOCK'S CELEBRATED WHEAT DRILLS, both with and without Guano attachments, together with a full assortment of AGRICULTURAL IMPLEMENTS, all of our own manufacture, which we offer wholesale and retail. Castings by the ton or smaller quantity.

COTTINGHAM & JOHNSON,

Manufacturers and Dealers in Implements and Seeds,
sepl
No. 150 Pratt street Wharf, Baltimore.

HICKOK'S OIDER MILLS,

MANUFACTURED EXCLUSIVELY BY THE

EAGLE WORKS, Harrisburg, Pa.

THIS MILL, provided with Iron Grinding Cylinders, is meeting with universal favor, and in localities where it has been used since 1852, the demand is so great, that the orders cannot be filled fast as received. It will grind faster and with less power than any other mill of its size and cost. It is made well and substantial, and warranted good.

Address W. O. HICKOK,
sepl-3t Agent of Eagle Works, Harrisburg, Pa.

GUANO! GUANO!!

THE Subscribers have now in ware-house their FULL SUPPLIES OF GUANO, and are prepared to fill orders for the same in such quantities as may be required.

Having been the pioneers in the Guano Trade, and pursuing it steadily for the past eleven years, they flatter themselves they possess unsurpassed facilities for its prosecution, and are determined that at all times their prices shall be at least as low as those of any responsible house in our city.

Their present stock of Guano—the Peruvian just imported—was all procured before the recent advance in price has been well protected from the weather, and being exclusively under their own control they are able to fill all orders at the shortest notice. It comprises the various grades of Peruvian, Mexican, African, and the celebrated Colombian, together with De Burg's and the Eagle Super-Phosphate of Lime.

They guarantee the purity of all Guano passing through their hands; and as their prices are uniform, farmers may safely order, relying that every attention will be given to its proper shipment by such mode as they may direct.

W. WHITELOCK & Co.,

augl-3t Corner of Gay and High streets, Baltimore.

COLOMBIAN GUANO.

THE Subscribers have now in the Bay, direct from Colombia, a small cargo of this celebrated Guano, and are prepared to receive orders for the same to be delivered as soon as it can be ground and packed. This cargo will be the only one received in time for Fall sowing, and as the quantity is limited, early application is necessary.

W. WHITELOCK & Co.

augl-3t Corner of Gay and High sts., Baltimore.

MEXICAN GUANO! MEXICAN GUANO!!

FOR SALE—A BARGAIN.

350 TONS MEXICAN GUANO, in lots to suit. Also, pure BONE DUST, and new TIMOTHY SEED. 30 Tons Rock, or Cattle SALT, for Farmers, for sale by
sepl-3t JAMES H. BROWNE,
50 S. Frederick street, Baltimore.

GUANO! GUANO!!

THE cargo of PERUVIAN GUANO now landing from ship Continent, for sale in large and small lots at the lowest market rates, by
sepl-1t WILLIAM ROBINSON,
No. 4 Hollingsworth Street.

NEW MOWING MACHINE.

THE subscriber, after repeated trials, has succeeded in perfecting a machine by which the finest SALT GRASS, as well as all kinds of up land and Meadow Grass can be cut in the most perfect manner, as the following letters among many received, will show:

MOWING MACHINE FOR SALT GRASS.
BASS RIVER, July 30, 1855.

C. B. ROGERS, Esq.

Dear Sir:—In answer to your inquiry, respecting the operation of the MOWING MACHINE, manufactured by you for Salt Grass, I take great pleasure in being able to inform you, that it cuts Grass to my entire satisfaction, and much better than I expected anything of the kind could do. It cuts the Black Grass, Salt and Sedge Grass, like a charm. It can't be beat, and is well adapted to the purpose for which it is intended. It is the first thing of the kind ever introduced into this section, that succeeded in giving satisfaction, and is just what we have long wanted.

Should you see proper to make use of this statement, you can do so, as a matter of information for those having Salt and Sedge Grass to cut, and who are in need of a similar machine. Yours, very respectfully,

ISAIAH ADAMS

To C. B. ROGERS, Seed and Agricultural Warehouse,
No. 29 Market Street, Philadelphia.

Manufactured and for sale only by C. B. ROGERS, No. 29 MARKET STREET, where all orders will be thankfully received and attended to.

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